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**STREAM RESTORATION SERVICES**
**SPB07-1378O-E**

## 1. PARTIES

THIS CONTRACT, is entered into by and between the State of Montana, Department of Administration, State Procurement Bureau, (hereinafter referred to as "the State"), whose address and phone number are Room 165 Mitchell Building, 125 North Roberts, PO Box 200135, Helena MT 59620-0135, (406) 444-2575 and Tetra Tech, (hereinafter referred to as the "Contractor"), whose address and phone number are 2436 Dixon Ave., Missoula, MT 59801 and (406) 543-3045.

**THE PARTIES AGREE AS FOLLOWS:**

## 2. PURPOSE

The purpose of this term contract is to establish a list of pre-qualified Stream Restoration Services Providers. Work will be assigned through task orders each against this term contract. The State makes no guarantee of use by any agency with authorized access to this term contract. This term contract covers stream restoration services projected to cost up to $499,999. Proposed projects for stream restoration services for which estimated costs exceed $500,000 will be advertised for competitive bid.

## 3. EFFECTIVE DATE, DURATION, AND RENEWAL

**3.1 Contract Term.** This contract shall take effect upon contract execution and terminate on June 30, 2009, unless terminated earlier in accordance with the terms of this contract. (Mont. Code Ann. § 18-4-313.)

**3.2 Contract Renewal.** This contract may, upon mutual agreement between the parties and according to the terms of the existing contract, be renewed in two-year intervals, or any interval that is advantageous to the State. This contract, including any renewals, may not exceed a total of seven years. Contractors failing to respond to renewal notices within the time specified by the SPB will have their name placed in an inactive status on the State website, and this shall make that contractor ineligible to receive task orders until such time as renewal information is received and accepted by the Contracts Officer.

## 4. NON-EXCLUSIVE CONTRACT

The intent of this contract is to provide state agencies with an expedited means of procuring services. This contract is for the convenience of state agencies and is considered by the State Procurement Bureau to be a "Non-exclusive" use contract. Therefore, agencies may obtain this service from sources other than the contract holder(s) as long as they comply with Title 18, MCA, and their delegation agreement. The State Procurement Bureau does not guarantee any usage.

## 5. COOPERATIVE PURCHASING

Under Montana law, public procurement units, as defined in section 18-4-401, MCA, have the option of cooperatively purchasing with the State of Montana. Public procurement units are local or state public procurement units of this or any other state, including an agency of the United States, or a tribal procurement unit. Unless the bidder/offeror objects, in writing, to the State Procurement Bureau prior to the award of this contract, the prices, terms, and conditions of this contract will be offered to these public procurement units.

## 6. TERM CONTRACT REPORTING

Term contractors shall furnish annual reports of term contract usage. The annual reports shall be based on information for July 1 through June 30 each year. Minimum information required to be included in usage reports: name of the agency or governmental entity that contacted contractor regarding a potential project; project title; agency contact person; if the project was not successfully negotiated, state the reason; number and title of contracts received; total dollar amounts for contracts received; the names of Contractor's personnel involved in the project; and project status as of usage report date. The first report for this term contract will be due July 30, 2008.

Reported usage and dollar totals may be checked by the State Procurement Bureau against state records for verification. Failure to provide timely or accurate reports is justification for cancellation of the contract and/or justification for removal from consideration for award of contracts by the State.

## 7. SERVICES AND/OR SUPPLIES

Contractor agrees to provide the State the following: Stream Restoration Designs, Oversight and/or Implementations with a range of complexities for various stream restoration, reclamation and enhancement projects located around the state using techniques that focus on restoring natural processes within the river-riparian ecosystem. Restoration, reclamation and enhancement projects will include stream channel re-naturalization; bank stabilization projects focusing on re-establishing natural structure and function, riparian restoration; spawning rearing and adult fish habitat enhancement; fish passage restoration; and in-stream flow enhancement.

## 8. ENGINEERING ACCESS

Contractor may need to have access to engineering services depending on the nature of the project. The contractor(s) will be expected to consult with the State and develop a recommendation as to whether engineering services are needed for a given project. However, engineering methodologies are not the emphasis of this RFP. Therefore, **NO** Architectural, Engineering and Land Surveying services are allowed under this term contract as defined under 37-67-101, MCA unless the procurement procedures of 18-8-204, MCA are followed.

**8.1 Reuse of Documents.** When the projects dictate a design or engineered approach, the State agrees that it will not apply the contractor's designs to any other projects.

## 9. PROJECT SELECTION

**9.1 Project Identification.** The State will be responsible for identifying projects, selecting a contractor, assigning a task order, and approving project payments.

**9.2 Meetings.** For stream restoration services, the contractor may be required to meet with state personnel at the onset of the project and periodically thereafter to resolve technical or contractual problems that may occur during the term of a project. The contractor may be required to attend meetings with other federal and state agencies and public meetings as directed by state personnel.

The contractor may be required to meet with state personnel at the project site to conduct a site evaluation and discuss project issues.

The contractor will be given a minimum of three full working days notice of meeting date, time, and location. While face-to-face meetings are desirable, a conference call meeting may be substituted at the discretion of state personnel. Consistent failure to participate in meetings (two consecutive missed or rescheduled meetings) may result in termination of the task order and contract.

**9.3 Approach Expectations.** In the case of reclamation activities, the agency will identify the preferred techniques. The selection of particular techniques by the State may define which contractor(s) are contacted for project initiation. The State is always open to new and innovative approaches that accomplish project goals.

## 10. SELECTING A CONTRACTOR

The State may select a term contract contractor listed in the Stream Restoration Services contract as posted on the Environmental Services Contract-Home page as provided under the State's website address http://gsd.mt.gov/apps/termcontracts/default.aspx, taking into consideration such things as the contractor's area of expertise, requirements and location of the project, the Contractor's availability and access to resources necessary to efficiently and effectively complete the project, demonstrated excellent past performance on state and public projects, identified subcontractors, and total project cost.

**10.1 General.** Ordering agencies shall use the procedures in this section when ordering services priced at hourly rates as established by each Term Contract (TC). The applicable rates and qualifications are identified in the TC along with the each contractor's point of contact.

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**10.2 Request for Quotation (RFQ) Procedures.** The ordering agency must provide an RFQ, which includes the SOW and limited but specific evaluation criteria (*e.g.*, experience and past performance), to TC contractors that offer services that will meet the agency's needs. The RFQ may be posted to the agency's state website to expedite responses.

**10.3 Statement of Work (SOW).** All SOWs shall include at a minimum a detailed description of the work to be performed, location of work, period of performance, deliverable schedule, applicable performance standards, and any special requirements (*e.g.*, security clearances, travel, special knowledge, budget constraints).

**10.3.1** Ordering agency may select a contractor from the pre-qualified list and directly negotiate a mutually acceptable project based on a sudden and unexpected happening or unforeseen occurrence or condition, which requires immediate action (*Exigency*).

**10.3.2** Ordering agency may place orders at or below the $5,000 threshold with any term contract contractor that can meet the agency's needs. The ordering agency should attempt to distribute orders among all contractors.

**10.3.3** For orders estimated to exceed $5,000 but be less than $25,000:

- The ordering agency shall develop a SOW.
- The ordering agency shall provide the Request for Qualifications (including the SOW and evaluation criteria) to at least three listed TC contractors that will meet the agency's needs.
- The ordering agency shall request that contractors submit firm-fixed prices to perform the services identified in the SOW.

**10.3.4** For orders estimated to exceed $25,000. In addition to meeting the requirements of 10.3.3 above, the ordering agency shall:

- Provide the Request for Qualifications (including the SOW and the evaluation criteria) to all listed term contract contractors.

**10.4 Evaluation.** The ordering agency shall evaluate all responses received using the evaluation criteria provided to the TC contractors. The ordering agency is responsible for considering the level of effort and the mix of labor proposed to perform a specific task being ordered, and for determining that the total price is reasonable. The agency will place the order with the contractor that represents the best value. After award, ordering agencies will provide timely notification to unsuccessful TC contractors. If an unsuccessful TC

contractor requests information on a task order award that was based on factors other than price alone, a brief explanation of the basis for the award decision shall be provided.

**10.5 Minimum Documentation.** The ordering agency shall document:

- The TC contractors considered, noting the contractor from which the service was purchased;
- A description of the service purchased;
- The amount paid;
- The evaluation methodology used in selecting the contractor to receive the order;
- The rationale for making the selection;
- Determination of price fair and reasonableness.

The State reserves the right to cease negotiations with the contractor if agreement cannot be reached on project approach and/or costs, and to begin negotiations with another contractor from the list. The State will keep complete written documentation of any negotiation process in the project file.

Agency project task orders will be utilized to finalize the project. Only written addenda will be used for adjustments of the task orders and must be signed by both parties. All task orders must contain signatures from both parties and appropriate agency legal review as directed in their procurement policy.

The State will monitor contractor selection by using the information provided in the annual term contract usage reports.

## 11. CONTRACTOR RESPONSIBILITIES

**11.1 Supervision and Implementation.** The contractor for an individual project will be responsible for the supervision and implementation of the approach and will be responsible for oversight of work performed by all subcontractors.

**11.2 Applicable Laws.** The contractor shall keep informed of, and shall comply with all applicable laws, ordinances, rules, regulations, and orders of the city, county, state, federal or public bodies having jurisdiction affecting any work to be done to provide the services required. The contractor shall provide all necessary safeguards for safety and protection, as set forth by the Department of Labor, Occupational Safety and Health Administration.

**11.3 Work Acceptance.** The contractor is responsible for project oversight as needed. All work rejected as unsatisfactory shall be corrected prior to final acceptance. The State may also periodically provide personnel for administrative oversight from the initiation of the task order through project completion. All work will be inspected by the State or designated liaison prior to approval of any task order payments. All work rejected as unsatisfactory shall be corrected prior to final inspection and acceptance. Contractor shall respond within seven calendar days after notice of defects has been given by the State and proceed to immediately remedy all defects.

**11.4 Records.** The contractor will supply the State with documentation, when requested, of methods used throughout project implementation. Contractor will maintain records, for itself and all subcontractors, of supplies, materials, equipment, and labor hours expended. The contractor will supply the State with photo documentation of methods of habitat restoration progress throughout project implementation. Contractor will maintain records for themselves and all subcontractors of supplies, materials, equipment and labor hours expended.

**11.5 Communication.** Remoteness of project sites may necessitate that the contractor have some form of field communication, such as a cellular phone. This communication is necessary to enable the State to respond to public questions or concerns related to the project, accidents, inspections, or other project issues that require immediate feedback. In addition, the State or cooperative purchaser may require scheduled communication at agreed upon intervals. The communication schedule will depend upon the project circumstances and requirements of the agency issuing a task order. In the case when a communication

schedule is included in the Scope of Work, the schedule will commence when the Contractor initiates the project.

**11.6 Collaboration.** The State encourages collaboration between contractors to increase the scope of services offered. If the contractor is not able to provide all services needed for the project, the State will expect the contractor to contact other contractors on the term contract list to negotiate subcontracts for these services before going elsewhere. Exceptions to this strategy will be evaluated on a case-by-case basis.

**11.7 Subcontractors, Project Budget and Invoicing.** All subcontractors to be used in any project must be approved by the agency initiating the project. Project budgets will be negotiated for each individual project task order. However, all rates, terms, and conditions set forth in this term contract will be applied to individual task orders.

Contractor's billing will include the subcontractors' charges, and payment will be made to the prime contractor.

**11.8 On-Site Requirements/Cleanup** The contractor should visit all job sites to verify measurements and to become fully aware of the conditions relating to the project and the labor requirements. Failure to do so will not relieve the contractor of their obligation to furnish all materials and labor necessary to carry out the provisions of the contract.

The contractor shall adequately protect the work, adjacent property, and the public in all phases of the work. The contractor shall be responsible for all damages or injury due to their action or neglect.

The contractor shall maintain access to all phases of the project pending inspection by the State or its representative.

All work rejected as unsatisfactory shall be corrected prior to final inspection and acceptance.

The contractor shall respond within seven calendar days after notice of observed defects has been given and shall proceed to immediately remedy these defects. Should the contractor fail to respond to the notice or not remedy the defects, the State may have the work corrected at the expense of the contractor.

In terms of cleanup, the contractor shall:

(a) keep the premises free from debris and accumulation of waste;
(b) clean up any oil or fuel spills;
(c) keep machinery clean and free of weeds;
(d) remove all construction smears and stains from finished surfaces;
(e) perform finishing site preparation to limit the spread of noxious weeds before final payment by the State; and
(f) remove all construction equipment, tools and excess materials before final payment by the State.

## 12. CONSIDERATION/PAYMENT

**12.1 Payment Schedule.** In consideration for the stream restoration, design and implementation services to be provided, the State shall pay according to the negotiated agreement for each task order. Hourly rates and miscellaneous charges as provided in Appendix C shall be the basis of any negotiations.

**12.2 Withholding of Payment.** The State may withhold payments to the contractor if the contractor has not performed in accordance with this contract. Such withholding cannot be greater than the additional costs to the State caused by the lack of performance.

## 13. COST/PRICE ADJUSTMENTS

**13.1 Cost Increase by Mutual Agreement.** After the initial term of the contract, each renewal term may be subject to a cost increase by mutual agreement. The State retains the unilateral right to reject any cost increase not supported by verifiable evidence.

**13.2 Differing Site Conditions.** If, during the term of this contract, circumstances or conditions are materially different than set out in the specifications, the contractor may be entitled to an equitable adjustment in the total project price. The contractor shall immediately cease work and notify the State in writing of any such conditions necessitating an adjustment as soon as they are suspected and prior to the changed conditions affecting the performance of this contract. Any adjustment shall be agreed upon in writing by both parties to the contract.

## 14. ACCESS AND RETENTION OF RECORDS

**14.1 Access to Records.** The contractor agrees to provide the State, legislative auditor, or their authorized agents' access to any records necessary to determine contract compliance. (18-1-118,MCA)

**14.2 Retention Period.** The contractor agrees to create and retain records supporting the Environmental Permit Preparation, Analysis and Assistance Services term contract for a period of three years after either the completion date of this contract or the conclusion of any claim, litigation or exception relating to this contract taken by the State of Montana or a third party.

## 15. ASSIGNMENT, TRANSFER, AND SUBCONTRACTING

The contractor shall not assign, transfer, or subcontract any portion of this contract without the express written consent of the State. (18-4-141, MCA) The contractor shall be responsible to the State for the acts and omissions of all subcontractors or agents and of persons directly or indirectly employed by such subcontractors, and for the acts and omissions of persons employed directly by the Contractor. No contractual relationships exist between any subcontractor and the State.

## 16. HOLD HARMLESS/INDEMNIFICATION

The contractor agrees to protect, defend, and save the State, and its elected and appointed officials, agents, and employees, while acting within the scope of their duties as such, harmless from and against all claims, demands, causes of action of any kind or character, including the cost of defense thereof, arising in favor of the contractor's employees or third parties on account of bodily or personal injuries, death, or damage to property arising out of services performed or omissions of services or in any way resulting from the acts or omissions of the Contractor and/or its agents, employees, representatives, assigns, subcontractors, except the sole negligence of the State, under this agreement.

## 17. REQUIRED INSURANCE

**17.1 General Requirements.** The contractor shall maintain for the duration of the contract, at its cost and expense, insurance against claims for injuries to persons or damages to property, including contractual liability, which may arise from or in connection with the performance of the work by the contractor, agents, employees, representatives, assigns, or subcontractors. This insurance shall cover such claims as may be caused by any negligent act or omission.

**17.2 Primary Insurance.** The contractor's insurance coverage shall be primary insurance as respect to the State, its officers, officials, employees, and volunteers and shall apply separately to each project or location. Any insurance or self-insurance maintained by the State, its officers, officials, employees, or volunteers shall be excess of the contractor's insurance and shall not contribute with it.

**17.3 Specific Requirements for Commercial General Liability.** The contractor shall purchase and maintain occurrence coverage with combined single limits for bodily injury, personal injury, and property

damage of $1,000,000 per occurrence and $2,000,000 aggregate per year to cover such claims as may be caused by any act, omission, or negligence of the Contractor or its officers, agents, representatives, assigns, or subcontractors.

**17.4 Additional Insured Status.** The State, its officers, officials, employees, and volunteers are to be covered and listed as additional insured's for liability arising out of activities performed by or on behalf of the contractor, including the insured's general supervision of the contractor; products and completed operations; premises owned, leased, occupied, or used.

**17.5 Specific Requirements for Automobile Liability.** The contractor shall purchase and maintain coverage with split limits of $500,000 per person (personal injury), $1,000,000 per accident occurrence (personal injury), and $100,000 per accident occurrence (property damage), OR combined single limits of $1,000,000 per occurrence to cover such claims as may be caused by any act, omission, or negligence of the contractor or its officers, agents, representatives, assigns or subcontractors.

**17.6 Additional Insured Status.** The State, its officers, officials, employees, and volunteers are to be covered and listed as additional insured's for automobiles leased, hired, or borrowed by the Contractor.

**17.7 Deductibles and Self-Insured Retentions.** Any deductible or self-insured retention must be declared to and approved by the State agency. At the request of the agency either: (1) the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the State, its officers, officials, employees, or volunteers; or (2) at the expense of the contractor, the contractor shall procure a bond guaranteeing payment of losses and related investigations, claims administration, and defense expenses.

**17.8 Certificate of Insurance/Endorsements.** A certificate of insurance from an insurer with a Best's rating of no less than A- indicating compliance with the required coverage has been received by the State Procurement Bureau, P.O. Box 200135, Helena, MT 59620-0135. The contractor must notify the State immediately, of any material change in insurance coverage, such as changes in limits, coverage, change in status of policy, etc. The State reserves the right to require complete copies of insurance policies at all times.

## 18. COMPLIANCE WITH WORKERS' COMPENSATION ACT

Contractors are required to comply with the provisions of the Montana Workers' Compensation Act while performing work for the State of Montana in accordance with 2005 Montana Laws, chapter 448, section 1, and sections 39-71-401, and 39-71-405, MCA. Proof of compliance must be in the form of workers' compensation insurance, an independent contractor's exemption, or documentation of corporate officer status. Neither the contractor nor its employees are employees of the State. This insurance/exemption must be valid for the entire term of the contract. A renewal document must be sent to the State Procurement Bureau, P.O. Box 200135, Helena, MT 59620-0135, upon expiration.

## 19. COMPLIANCE WITH MONTANA PREVAILING WAGE REQUIREMENTS

Unless superseded by federal law, Montana law requires that contractors and subcontractors give preference to the employment of Montana residents for any public works contract in excess of $25,000 for construction or nonconstruction services in accordance with sections 18-2-401 through 18-2-432, MCA, and all administrative rules adopted pursuant thereto. Unless superseded by federal law, each contractor shall ensure that at least 50% of the contractor's workers performing labor on a construction project are bona fide Montana residents. The Commissioner of the Montana Department of Labor and Industry has established the resident requirements in accordance with sections 18-2-403 and 18-2-409, MCA. Any and all questions concerning prevailing wage and Montana resident issues should be directed to the Montana Department of Labor and Industry.

In addition, unless superseded by federal law, all employees working on a public works contract shall be paid prevailing wage rates in accordance with sections 18-2-401 through 18-2-432, MCA, and all administrative rules adopted pursuant thereto. Montana law requires that all public works contracts, as defined in section 18-2-401, MCA, in which the total cost of the contract is in excess of $25,000, contain a provision stating for each

job classification the standard prevailing wage rate, including fringe benefits, travel, per diem, and zone pay that the contractors, subcontractors, and employers shall pay during the public works contract.

Furthermore, section 18-2-406, MCA, requires that all contractors, subcontractors, and employers who are performing work or providing services under a public works contract post in a prominent and accessible site on the project staging area or work area, no later than the first day of work and continuing for the entire duration of the contract, a legible statement of all wages and fringe benefits to be paid to the employees in compliance with section 18-2-423, MCA. Section 18-2-423, MCA, requires that employees receiving an hourly wage must be paid on a weekly basis.

Each contractor, subcontractor, and employer must maintain payroll records in a manner readily capable of being certified for submission under section 18-2-423, MCA, for not less than three years after the contractor's, subcontractor's, or employer's completion of work on the public works contract.

For current prevailing wage information visit the state website at:
http://erd.dli.mt.gov/laborstandard/wagehrprevail.asp

## 20. COMPLIANCE WITH LAWS

The Contractor must, in performance of work under this contract, fully comply with all applicable federal, state, or local laws, rules, and regulations, including the Montana Human Rights Act, the Civil Rights Act of 1964, the Age Discrimination Act of 1975, the Americans with Disabilities Act of 1990, and Section 504 of the Rehabilitation Act of 1973. Any subletting or subcontracting by the Contractor subjects subcontractors to the same provision. In accordance with section 49-3-207, MCA, the Contractor agrees that the hiring of persons to perform the contract will be made on the basis of merit and qualifications, and there will be no discrimination based upon race, color, religion, creed, political ideas, sex, age, marital status, physical or mental disability, or national origin by the persons performing the contract.

## 21. INTELLECTUAL PROPERTY

All patent and other legal rights in or to inventions created in whole or in part under this contract must be available to the State for royalty-free and nonexclusive licensing. Both parties shall have a royalty-free, nonexclusive, and irrevocable right to reproduce, publish or otherwise use and authorize others to use, copyrightable property created under this contract.

## 22. OWNERSHIP AND PUBLICATION OF MATERIALS

The State (and the ordering agency) shall own working papers and end products, but the contractor may keep a copy. The State and the contractor agree that any interpretation of data or conclusions pertaining to this contract and task orders will be submitted for review to the State prior to release. It is further agreed that all public releases pertaining to this contract will be at the discretion of the State. The State must authorize the contractor in writing to release any information. Unless stated otherwise in this contract, upon termination of this contract, all information and data will become the property of the State. A copy may be kept by the contractor.

## 23. PATENT AND COPYRIGHT PROTECTION

**23.1 Third Party Claim.** In the event of any claim by any third party against the State that the products furnished under this contract infringe upon or violate any patent or copyright, the State shall promptly notify contractor. Contractor shall defend such claim, in the State's name or its own name, as appropriate, but at contractor's expense. Contractor will indemnify the State against all costs, damages, and attorney's fees that accrue as a result of such claim. If the State reasonably concludes that its interests are not being properly protected, or if principles of governmental or public law are involved, it may enter any action.

**23.2 Product Subject of Claim.** If any product furnished is likely to or does become the subject of a claim of infringement of a patent or copyright, then contractor may, at its option, procure for the State the right

to continue using the alleged infringing product, or modify the product so that it becomes non-infringing. If none of the above options can be accomplished, or if the use of such product by the State shall be prevented by injunction, the State will determine if the Contract has been breached.

## 24. CONTRACT TERMINATION

**24.1 Termination for Cause.** The State may, by written notice to the contractor, terminate this contract in whole or in part at any time the Contractor fails to perform this contract.

**24.2 Reduction of Funding.** The State, at its sole discretion, may terminate or reduce the scope of this contract, if available funding is reduced for any reason. (18-4-313(3), MCA)

## 25. STATE PERSONNEL

**25.1 State Contract Manager.** The State Contract Manager identified below is the State's single point of contact and will perform all contract management pursuant to section 2-17-512, MCA, on behalf of the state. Written notices, requests, complaints or any other issues regarding the contract should be directed to the State Contract Manager.

The State Contract Manager for this contract is:

Robert Oliver, Contracts Officer
Room 165 Mitchell Building
125 North Roberts
PO Box 200135
Helena MT 59620-0135
Telephone #: (406) 444-0110
Fax #: (406) 444-2529
E-mail: roliver@mt.gov

**25.2 State Project Manager.** Each using state agency or cooperative purchaser will identify a Project Manager in the project task order. The Project Manager will manage the day-to-day project activities on behalf of the State/Cooperative Purchaser.

## 26. CONTRACTOR PERSONNEL

**26.1 Change of Staffing.** Since qualifications of personnel were key in determining which offeror's were selected to be on this term contract, a written notification to the State Agency requesting services of any contractor changes of key personnel must be made prior to entering into negotiations to perform any specific work scope. Contractor shall replace such employee(s) at its own expense with an employee of substantially equal abilities and qualifications without additional cost to the Agency. If these staffing changes cause the contractor to no longer meet the qualifications stated herein, that firm will be removed from the service area of this term contract. Failure to notify the State Agency of staffing changes could result in the contractor being removed from the term contract listing and possible suspension from bidding on other State projects.

**26.2 Contractor Contract Manager.** The Contractor Contract Manager identified below will be the single point of contact to the State Contract Manager and will assume responsibility for the coordination of all contract issues under this contract. The Contractor Contract Manager will meet with the State Contract Manager and/or others necessary to resolve any conflicts, disagreements, or other contract issues.

The Contractor Contract Manager for this contract is:

William Bucher
2436 Dixon Ave.
Missoula, MT 59801
Telephone #: (406) 543-3045

Fax # (406) 543-3088:
E-mail: bill.bucher@tetratech.com

**26.3 Contractor Project Manager.** The Contractor Project Manager identified below will manage the day-to-day project activities on behalf of the Contractor:

The Contractor Project Manager for this contract is:

William Bucher
2436 Dixon Ave.
Missoula, MT 59801
Telephone #: (406) 543-3045
Fax # (406) 543-3088:
E-mail: bill.bucher@tetratech.com

## 27. CONTRACTOR PERFORMANCE ASSESSMENTS

The State may do assessments of the Contractor's performance. This contract may be terminated for one or more poor performance assessments. Contractor will have the opportunity to respond to poor performance assessments. The State will make any final decision to terminate this contract based on the assessment and any related information, the Contractor's response, and the severity of any negative performance assessment. The Contractor will be notified with a justification of contract termination. Performance assessments may be considered in future solicitations.

## 28. TRANSITION ASSISTANCE

If this contract is not renewed at the end of this term, or is terminated prior to the completion of a project, or if the work on a project is terminated, for any reason, the Contractor must provide for a reasonable period of time after the expiration or termination of this project or contract, all reasonable transition assistance requested by the State, to allow for the expired or terminated portion of the services to continue without interruption or adverse effect, and to facilitate the orderly transfer of such services to the State or its designees. Such transition assistance will be deemed by the parties to be governed by the terms and conditions of this contract, except for those terms or conditions that do not reasonably apply to such transition assistance. The State shall pay the Contractor for any resources utilized in performing such transition assistance at the most current rates provided by the contract. If there are no established contract rates, then the rate shall be mutually agreed upon. If the State terminates a project or this contract for cause, then the State will be entitled to offset the cost of paying the Contractor for the additional resources the Contractor utilized in providing transition assistance with any damages the State may have otherwise accrued as a result of said termination.

## 29. CHOICE OF LAW AND VENUE

This contract is governed by the laws of Montana. The parties agree that any litigation concerning this bid, proposal, or subsequent task order must be brought in the First Judicial District in and for the County of Lewis and Clark, State of Montana, and each party shall pay its own costs and attorney fees. (18-1-401, MCA)

## 30. SCOPE, AMENDMENT AND INTERPRETATION

**30.1 Contract.** This contract consists of 12 numbered pages, any Attachments as required, RFP # SPB07-1378O**,** as amended, and the Contractor's RFP response, as amended. In the case of dispute or ambiguity about the minimum levels of performance by the Contractor, the order of precedence of document interpretation is in the same order.

**30.2 Entire Agreement.** These documents contain the entire agreement of the parties. Any enlargement, alteration, or modification requires a written amendment signed by both parties.

**31. EXECUTION**

The parties through their authorized agents have executed this contract on the dates set out below.

**DEPARTMENT OF ADMINISTRATION**
**STATE PROCUREMENT BUREAU**
**PO BOX 200135**
**HELENA, MT 59620-0135**

BY: _____
(Name/Title)

BY: _____
(Signature)

DATE: _____

**TETRA TECH**
**2436 DIXON AVE.**
**MISSOULA, MT 59801**

BY: _____
(Name/Title)

BY: _____
(Signature)

DATE: _____

Approved as to Legal Content:

_____
Legal Counsel (Date)
Agency: _____

Approved as to Form:

_____
Procurement Officer (Date)
State Procurement Bureau

Proposal To Provide

# Montana Stream Restoration Services

State Procurement Bureau
General Services Division
Department of Administration

RFP SPB07-13780
June 2007

TETRA TECH

**DEPARTMENT OF ADMINISTRATION**
**GENERAL SERVICES DIVISION**
**STATE PROCUREMENT BUREAU**
www.mt.gov/doa/gsd

BRIAN SCHWEITZER
GOVERNOR

STATE OF MONTANA

MITCHELL BUILDING, ROOM 165
PO BOX 200135

(406) 444-2575
(406) 444-2529 FAX
TTY Users-Dial 711

HELENA, MONTANA 59620-0135

June 14, 2007

STATE OF MONTANA
REQUEST FOR PROPOSAL ADDENDUM
RFP NO.: SPB07-1378O
TO BE OPENED: June 19, 2007
TITLE: STREAM RESTORATION SERVICES

ADDENDUM NO. 01

To All Offerors:

Attached are written questions received in response to this RFP. These questions, along with the State's response, become an official amendment to this RFP.

All other terms of the subject "Request for Proposal" are to remain as previously stated.

**Acknowledgment of Addendum:**

The offeror for this solicitation must acknowledge receipt of this addendum. This page must be submitted at the time set for the proposal opening or the proposal may be disqualified from further consideration.

I acknowledge receipt of Addendum No. 01.

Signed: _____

Company Name: Tetra Tech

Date: June 15th 2007

Sincerely,

Robert Oliver, Contracts Officer

**PROPOSAL**

**MONTANA DEPARTMENT OF ADMINISTRATION**

**RFP NO: SPB04-878P**

# STREAM RESTORATION SERVICES

Prepared for:

Montana Department of Administration
State Procurement Bureau
Room 165, Mitchell Building
125 North Roberts Street
P.O. Box 200135
Helena, Montana 59620-0135

Prepared By:

Tetra Tech
2436 Dixon Avenue
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Missoula, Montana 59806

June 19, 2007

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BILL H. BUCHER, P.E., P.L.S.

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Tetra Tech understands and will comply.

# SECTION 2: RFP STANDARD INFORMATION

Tetra Tech understands and will comply.

# SECTION 3: SCOPE OF PROJECT

## 3.0 BACKGROUND

Tetra Tech understands and will comply.

## 3.1 ENGINEERING ACCESS

Tetra Tech understands and will comply.

## 3.2 GENERAL SELECTION PROCESS

Tetra Tech understands and will comply.

## 3.3 CONTRACTOR SELECTION PROCESS

Tetra Tech understands and will comply.

## 3.4 CONTRACTOR RESPONSIBILITIES

Tetra Tech understands and will comply.

## 3.5 SUBCONTRACTORS

### 3.5.1 Equipment Operators

Tetra Tech will subcontract to one of three Montana equipment operators for construction of projects awarded to it. These three excavation/construction firms all have extensive experience with riparian projects. The stream and wetland restoration work will be performed by Tetra Tech, which also has registered Montana engineers who will execute engineering designs.

The three equipment contractors on our team are:

- R. E. Miller and Sons, Inc. of Dillon, Montana;
- Rowe Excavation, Inc. of Dillon, Montana; and
- Johnson Brothers Contracting, Inc. of Missoula, Montana.

**R. E. Miller and Sons, Inc**. is a full-service excavating company that has served western Montana for over 38 years. Natural resource enhancement accounts for approximately sixty percent of the company's annual contracts. The remainder of R. E. Miller and Sons' workload is in irrigation, road construction, and site development. Natural resource enhancement work has

included river restoration, fish habitat improvement, stream bank stabilization, pond construction, and wetland construction.

**Rowe Excavation, Inc.,** is a moderately sized, specialized firm that performs almost exclusively stream rehabilitation and related water resource improvements. Rowe Excavation, Inc. has successfully completed many projects for the Department of Fish, Wildlife and Parks as well as other private owners and governmental agencies.

**Johnson Brothers Contracting, Inc**. has over 30 years experience in excavation contracting. This firm has performed work on a variety of stream restoration projects for private owners and agencies. Their work experience also includes pond construction and stream relocations.

### 3.5.2 Revegetation Specialists

Tetra Tech will subcontract riparian revegetation work to one of two revegetation contractors for portions of projects awarded to it. Access to the services and staff available from these multiple sources allows Tetra Tech to prevent lack of availability due to limited the resources offered by a single company. By combining the advantages of multiple well qualified sources to these services in addition to Tetra Tech's extensive staff, Tetra Tech offers the ability to work on multiple project simultaneously if necessary. Furthermore, this flexibility allows Tetra Tech to select one of the two listed subcontractors who is most appropriate for the specific application with respect to size and complexity of the project. These revegetation firms both have extensive experience with riparian projects.

The two revegetation contractors on our team are:

- Rocky Mountain Native Plant Company of Hamilton, Montana.
- Geum Consulting, Inc. of Hamilton, Montana.

**Rocky Mountain Native Plants Company** (RMNP) is one of the largest native plant producers in the Western US and is an important source of plant material for restoration and mitigation projects throughout the Rocky Mountain West. From the start of operations in 1998, the quality and consistency of our products and services has earned a reputation that is unsurpassed.

Current annual production of RMNP is in excess of 3 million seedlings of herbaceous species and well in excess of 500,000 woody seedlings. The plant production facility is located east of Rifle, Colorado at an elevation of 5500 feet, with a climate very similar to that of much of Montana. The cool nights and warm days typical throughout the growing season are ideal for hardening of plant material for most sites in the mountain and intermountain west. In contrast to many plant producers, whose production and experience is equally focused on a wide range of seedling sizes. Seedlings produced range from very small plugs for pre-vegetated coir production, to large containerized plants (up to 15-gallon and "ball and burlapped materials) for projects where post-project visuals and aesthetics have equal importance as restoration goals.

**Geum Environmental Consulting, Inc.** (GEC) specializes in large-scale, collaborative riparian and floodplain restoration planning for rivers and streams that involve diverse stakeholders and regulatory entities. Staff have experience implementing all phases of riparian and wetland restoration including site characterization, permitting, project design, construction and field crew

oversight, and project monitoring. GEC defines restoration as creating site conditions to sustain ecological processes that will support project objectives.

## 3.6 SCOPE OF WORK

Tetra Tech understands and will comply.

# SECTION 4: OFFEROR QUALIFICATIONS

## 4.0 STATE'S RIGHT TO INVESTIGATE AND REJECT

Tetra Tech understands and will comply.

## 4.1 OFFEROR INFORMATIONAL REQUIREMENTS

### 4.1.1 References

Tetra Tech offers the references listed in **Table 4-1** for stream and wetland restoration projects located in Montana. All projects have been active or completed within the last five years. The first three projects were performed for government/public agencies and the last five for private landowners. More complete descriptions of many of these projects as well as projects located outside Montana are found under our Previous Projects, Section 4.1.4.

**Table 4-2** is a list of recent public agency work currently under contract with Tetra Tech. Because we currently have many contracts in place with federal, state, and local government agencies, we have listed only those that are most relevant to our Montana work.

### 4.1.2 Resumes/Company Profile and Experience

***Resumes (Key Personnel)***

***Company Profile (Qualifications and Office Locations)***

Tetra Tech (formerly Maxim Technologies, Inc.), is a multi-service environmental and engineering consulting firm with over 7,500 employees located in more than 240 offices worldwide. More than 27 of these offices are located throughout the intermountain and midwestern portions of the United States. In Montana, the firm employs over 100 professional and technical staff at offices in Helena, Missoula, Billings, Bozeman and Great Falls. **Figure 4-1** shows Tetra Tech's Montana office locations and the number of professional and support personnel at each location. Tetra Tech was established in 1966; however, the firms Montana offices have been in business in the state since 1957 as Maxim Technologies, Inc. and other former company names. Tetra Tech (as Maxim Technologies, Inc.) has provided stream and wetland restoration, enhancement and development services in Montana since 1995.

Tetra Tech's Montana offices specialize in hydrologic and hydraulic engineering, natural resources services, environmental investigations, feasibility studies, engineering design, geotechnical investigations, industrial hygiene and safety, geochemistry, construction oversight, and construction management. Services we provide that are applicable to this solicitation include:

- Stream Evaluation, Restoration and Design
- Stream Hydraulic Modeling
- Bio-engineered Erosion Protection Design
- Wetland Restoration, Enhancement and Development
- Hydrology & Hydrogeology
- Soil Science & Geology
- Biology and Revegetation
- Fisheries and Aquatics

- Hydrogeology
- Geotechnical, Civil, Environmental, and Geological Engineering
- Construction Materials Engineering & Testing
- Construction Management and Inspection
- Surveying & CADD
- Plan and Specification Development & Preparation
- Field Engineering Assistance & Contractor Coordination

| TABLE 4-1 References | | | |
|---|---|---|---|
| **Project Name, Location and Dates of Service** | **Nature of Tetra Tech's Services** | **Client and Client Contact** | **Project Participants** |
| Streamside Tailings Operable Unit, Butte-Anaconda, Montana<br><br>1997-Present | Hydrologic and geomorphic investigations, stream channel, floodplain, and wetland design, construction management | Montana Department of Environmental Quality<br>Mine Waste Cleanup Bureau<br>P.O. Box 200901<br>Helena, MT 59620-0901<br>Mr. Joel Chavez – Project Manager<br>(406) 841-5031<br>jchavez@state.mt.us | Bill Bucher, P.E. |
| Restoration at New World Mining District Response and Restoration Project Gallatin National Forest, Cooke City, Montana<br><br>2000-Present | Tailings removal and stream channel reconstruction, bank stabilization, and construction oversight. | Gallatin National Forest<br>P.O. Box 130<br>Bozeman, MT 59771<br>Ms. Mary Beth Marks – On-scene Coordinator<br>(406) 587-6709<br>mmarks@fs.fed.us | Mike Cormier<br>Bill Bucher, P.E.<br>Bradley Kucera, P.E. |
| Ontario Mine and Millsite Reclamation Project Helena National Forest Helena, Montana<br><br>2000-2002 | Site investigation, analysis of stream sediment, design of stream channel and wetlands, aquatic habitat, T & E species, construction management. | USDA Forest Service, Region 1<br>P.O. Box 7669<br>Missoula, MT 59807<br>Mr. Bob Wintergerst - Contracting Officer's Representative<br>(406) 329-3036<br>rwintergerst@fs.fed.us | Mike Cormier<br>Bill Bucher P.E. |
| Big Timber Wetlands Reserves Project, Big Timber, Montana<br><br>2001 to present | Hydrologic, soils, wildlife and vegetation studies, wetland delineation, wetland design and construction monitoring. | Mr. Mark Norem<br>P.O. Box 1285<br>Big Timber, MT 59011<br>(406) 932-4606<br>marknorem@mcn.net | Walt Vering |

| TABLE 4-1 References | | | |
|---|---|---|---|
| **Project Name, Location and Dates of Service** | **Nature of Tetra Tech's Services** | **Client and Client Contact** | **Project Participants** |
| Thomson River Riparian Restoration Project, Columbia Falls, Montana<br><br>1998 - 2007 | Native Riparian Forest Restoration in floodplain. Revegetation of riparian area dominated by canarygrass to restore natural diversity | Mr. Brian Sugden<br>Plum Creek Timber Company<br>500 12th Avenue W.<br>Columbia Falls, Montana 59912(406) 892-6368<br>Brian.Sugden@plumcreek.com | Geum Environmental Consulting, Inc. (Subcontractor Supplied Reference) |
| Threemile Creek Restoration Project, Missoula, Montana<br><br>2005 | Reduce sediment delivery to stream and restore fish habitat. | Jan Miller<br>Brown Valley Ranch<br>\10900 Allen Lane<br>Lolo, Montana 59847<br>jdl@lolocr.myrf.net | Geum Environmental Consulting, Inc. (Subcontractor Supplied Reference) |
| Parson Slough Restoration Project, near Waterloo, Montana<br><br>2007 | Stream reconstruction to restore and enhance existing trout habitat and spawning grounds. | Bruce Reywinkel<br>Trout Unlimited<br>4660 Spurgin Road<br>Missoula, MT 59804<br>willykin@bigshy.net | R. E. Rowe Excavation Inc. (Subcontractor Supplied Reference) |
| Stream and Pond Restoration Project, Wolf Creek, Montana<br><br>2002 - 2005 | Stream flow estimation and parabolic channel design, irrigation analysis, pond revegetation plan. | Mr. Chris Hohenlohe<br>2710 Foxhall Rd. NW<br>Washington, DC 20007<br><br>In Montana:<br>1725 Oxbow Drive<br>Wolf Creek, MT 59648<br>(406) 235-4281 | Chris Martin |

| Table 4-2 - Public Agency Contract Work | | | | | |
|---|---|---|---|---|---|
| **Project Name & Location** | **b. Nature of Firm's Responsibility** | **c. Agency (Responsible Office) Name and Address and Project Manager's Name & Phone Number** | **d. Percent complete** | **e. Estimated Cost (in Thousands)** | |
| | | | | **Entire Project** | **Work Which Firm Is Responsible** |
| Streamside Tailings Operable Unit , Butte-Anaconda, Montana | Site Investigation, Design Engineering, Construction Management. | Montana Department of Environmental Quality<br>Mine Waste Cleanup Bureau<br>P.O. Box 200901<br>Helena, MT 59620-0901<br>Mr. Joel Chavez<br>(406) 841-5031 | 50 | 100,000,000 | 2,500,000 |
| Clark Fork River Technical Assistance, Western Montana | Technical Review, Engineering Design, Geographic Information Systems Analysis, Report Preparation | Montana Department of Justice<br>Natural Resource Damage Program<br>P.O. Box 201425<br>Helena, MT 59620-1425<br>Mr. Doug Martin<br>(406) 444-0234 | 80 | 100,000,000 | 40,000 |
| Environmental Services Montana | Site Investigation, Monitoring, Remediation of hazardous waste and petroleum contaminated sites. | Montana Department of Transportation<br>2701 Prospect Ave.<br>P.O. Box 201001<br>Helena, MT 59620-1001<br>Mr. Stan Sternberg, Environmental Services<br>(406) 444-7647 | 5 | 200,000 | 200,000 |
| Leaking Underground Storage Tank Trust Program, Montana | Site Investigation, monitoring, remediation of petroleum contaminated sites. | Montana Department of Environmental Quality<br>Mine Waste Cleanup Bureau<br>P.O. Box 200901<br>Helena, MT 59620-0901<br>Mr. Jeff Kuhn<br>(406) 841-5055 | 90 | 560,000 | 560,000 |

| Table 4-2 - Public Agency Contract Work | | | | | |
|---|---|---|---|---|---|
| **Project Name & Location** | **b. Nature of Firm's Responsibility** | **c. Agency (Responsible Office) Name and Address and Project Manager's Name & Phone Number** | **d. Percent complete** | **e. Estimated Cost (in Thousands)** | |
| | | | | **Entire Project** | **Work Which Firm Is Responsible** |
| General Environmental Engineering Consulting Studies - Western Region and Denver Facilities Service Area | Site Investigations, Pollution Prevention Studies, Remedial Actions, Project Management for Remediation, General Environmental Engineering Investigation Studies | U.S. Postal Service<br>Facilities Service Office<br>Stanford Place One – Suite 400<br>8055 East Tufts Avenue Parkway<br>Denver, CO 80237<br>(303) 220-6538 | 40 | 5,000 | 4,500 |
| Bitterroot Valley Sanitary Landfill Groundwater Cleanup; Ravalli County, MT | RI/FS Remediation System Design, Remediation Oversight, Operations and Maintenance | National Institutes of Health<br>Bldg. 13, Room 2W64<br>9000 Rockville Pike<br>Bethesda, MD 20892<br>Mr. Jim Carscadden<br>(301) 496-3537 | 90 | 5,000 | 2,000 |
| CERCLA Support Services, New World Response and Restoration Project Park County, MT | Abandoned Mine Reclamation and Restoration Field Studies, Slope Stability Evaluations, Geotechnical, Civil, and Environmental Engineering Design, Construction Oversight | USDA Forest Service, Region 1<br>200 East Broadway<br>P.O. Box 7669<br>Missoula, MT 59801<br>Mr. Bob Kirkpatrick<br>(406) 329-3307 | 98 | 22,500 | 5,000 |
| CERCLA/RCRA Services, Region 1, Various Locations in MT, ID, ND, and SD | Abandoned Mine Site Assessment, Remediation Design and Construction, Construction Oversight, and Emergency Response | USDA Forest Service, Region 1<br>200 East Broadway<br>P.O. Box 7669<br>Missoula, MT 59801<br>Ms. Linda Lanham<br>(406) 329-3153 | 70 | 4,500 | 1,950 |

Tetra Tech employs Geographic Information System (GIS) analysts, computer assisted design and drafting (CADD) operators, data base specialists, clerical staff, graphic artists, and field technicians who conduct work with the necessary equipment to allow us to provide full-service, state-of-the-practice engineering and environmental consulting services.

Tetra Tech's approach to stream restoration and stream renaturalization is based on hydrologic and geomorphic principles integrated with an understanding of aquatic habitat. For smaller projects we have found it useful to perform a Rosgen Level II stream classification to establish general parameters for stream reconstruction. Design details are refined through hydrologic, hydraulic and sediment transport calculations as needed. Habitat features are incorporated as appropriate for the stream type and natural materials such as logs, appropriately sized and placed rock, and fascines. An example application of this approach, taken from the list of our recent references, is restoration of Ontario Creek. Tetra Tech has numerous additional applications of this approach which can be furnished upon request.

Where complete reconstruction of the stream and floodplain is necessary, greater emphasis is placed on geomorphic, hydrologic, hydraulic and sediment transport calculations. In these highly disturbed systems, careful control of shear forces on bed, banks and floodplain is needed during the period that the natural system is reestablishing. Because we apply bio-engineering material such as coir fabric on these sites, as the floodplain and banks strengthen, the stream and floodplain gradually evolve into a naturally functioning system without catastrophic failure. An example of this approach is the work on Silver Bow Creek near Butte for the Montana Department of Environmental Quality rehabilitating over 25 miles of stream. Specifically, Tetra Tech has completed detailed stream analysis, design and construction oversight services over the past 10 years for over ten miles of Silver Bow Creek that have included:

- Design and construction of bio-engineered fabric-encapsulated streambanks;
- Incorporation of fish habitat features such as log and boulder placements, overhanging banks and step pools in steep sections;
- Design and layout of stream channel planform and cross sections for grade and bank-full flow requirements;
- Conducting geomorphologic analyses to determine bed material design and sediment transport requirements;
- Characterizing and classifying the existing stream using hydrologic, hydraulic and fluvial geomorphic analyses;
- Design of reinforced toe features to provide temporary stability of pool outer banks;
- Preparation of construction plans and specifications; and
- Construction management and oversight of stream construction activities.

For the past ten plus years, Tetra Tech has provided stream and wetland restoration services for the USDA Forest Service and private clients on various Montana projects. For each of these projects, Tetra Tech determined project objectives, conducted existing conditions evaluations and analyses for baseline data, provided design and construction oversight services, and

recommended or provided monitoring services for evaluating future performance. In all cases, Tetra Tech used state-of-the-practice methods for various phases of evaluation and design.

Tetra Tech's wetland services include:

- Collecting surface and groundwater data;
- Investigation and evaluation of soil conditions;
- Wetland delineations;
- Conducting functions and values assessments;
- Engineering design;
- Environmental permit preparation;
- Construction oversight of wetland construction activities; and
- Agency liaison.

Detailed descriptions for past projects are included in Section 4.1.4 and project references were shown in Section 4.1.1 of this proposal. We are confident that you will find our experience and reputation are well suited for stream and wetland projects described in this solicitation.

***Management Approach***

We propose to administer and manage this contract out of our Helena office, home to our proposed project manager, Mr. Bill Bucher, P.E., and centrally located to coordinate activities across the state. Our Helena office has approximately 26 employees with 3 hydraulic/hydrologic engineers experienced in stream restoration and reconstruction design; two wetland and vegetation biologists; three hydrogeologists; and other environmental scientists, biologists, geologists, technicians, CADD/GIS operators, construction materials testing laboratory and support staff. Our Helena office is located within 15 minutes of FWP and DOA headquarters, allowing convenient face-to-face communication with agency project managers. Engineering support and labor will be furnished cooperatively with our Missoula and Helena office to provide a cost effective creation and implementation of the design and field activities (see section 4.1.5 for details of support staff responsibilities).

**Figure 4-2** shows our proposed organizational structure, locations of key personnel, and the division of responsibilities. For FWP or other State entity stream and wetland restoration projects, Tetra Tech has designated Mr. Bucher as the main point of contact for FWP and DOA project managers. Other key personnel shown on our organizational have the qualifications and experience needed to perform stream and wetland restoration services for this contract. Detailed descriptions of our team's qualifications, training and project experience are found in Section 4.1.5 of this proposal.

Mr. Bucher's experience in project management, water resources engineering, and his location in our Helena office make him especially qualified to manage restoration projects. Mr. Bucher will communicate directly with the State project manager and our team coordinators. Mr. Bucher will determine which Tetra Tech and subcontractor personnel are best suited to work on particular assignments based on their expertise, experience, and availability. Selection of construction subcontractors will be a cooperative decision between the State and Mr. Bucher. Mr. Bucher will be accountable for completion of the various projects or assignments to the satisfaction of the State and/or contracting officer.

If awarded this contract, Tetra Tech will use frequent and accurate personal, telephone, written and email communication with the State to cooperatively set and update contractual agreements, and project scopes, budgets and schedules. We prefer to conduct face-to-face meetings between the Tetra Tech project manager and key personnel and DOA staff to promote good communication. The key components of Tetra Tech's management system are personnel training and senior review of our projects. Tetra Tech project managers undergo substantial training to ensure that they understand our internal systems and are well equipped to handle the needs of our various clients. The training covers Tetra tech's accounting system, which is focused on project support, as well as schedule and scope management using various types of applicable software. Our personnel are further trained in methods to manage human and equipment resources as well as client interface methods. Along with this training, Tetra Tech promotes periodic and routine reviews of projects by its senior staff to ensure project management plans are being followed, health and safety needs are addressed, and the quality expectations for the projects are achieved. Such audits, although not directly seen outside of Tetra Tech, result in our clients receiving the best possible product in a timely manner.

Strategically, Tetra Tech's locations in Montana provide an advantage to efficiently perform all phases of the projects anticipated in this solicitation and to establish effective relationships with DOA personnel. Our Helena office location is ideal for close and frequent management communication between all parties. Our other Montana offices allow rapid access to most sites in the state and a local presence with State entity field offices. We have established solid working relationships with FWP on many projects, including the following:

- Engineering design and construction management for the York Bridge access site;
- Engineering inspection and reporting services for the safety inspection of Eureka Dam; and
- Instream Flow Analysis for Cedar Creek.

Our goal is to provide not only excellent restoration services, but to establish a long-lasting relationship with DOA, MDEQ, and/or FWP. We will work diligently to earn the State's respect and trust. We strive to create an environment where Tetra Tech and State personnel rely on each other's opinions and technical capabilities to successfully reach the objectives of the State on these projects. We truly feel our past relationship with FWP, MDEQ and DOA in addition to our qualifications will attain these goals.

### *Response to Specific Project Assignments*

Once a project assignment is presented to Tetra Tech, we will work together with the State to develop a project work plan and budget to guide successful completion of the project. In addition to the procedures identified in the RFP for cooperatively developing project feasibility, conceptual design and costs with the State, Tetra Tech will address project staffing and schedule. Each project will be staffed with the best qualified personnel who are geographically near the project. A project schedule would be prepared to highlight the timing when major milestones of each phase of the project will be achieved. Such a schedule allows review time for our client, management personnel, and for any regulatory personnel involved, if necessary.

### *Support Services*

Tetra Tech offers a variety of support services that would be available to the State for stream and wetland restoration projects. These services include CADD, GIS, drilling, monitoring well installation, surveying, construction materials testing, and construction oversight. Our CAD

operators are equipped with state-of-practice software and hardware, including color laser printers and E-size color plotters. Tetra Tech offers a variety of GIS mapping services and GIS analytical experience that directly pertains to the types of work products expected by the State for these stream restoration projects.

Furthermore, Tetra Tech offers cost effective engineering support from our Missoula office with senior oversight and management from our Helena office. This allows Tetra Tech to furnish junior level staff to provide engineering services with a cost effective project support structure. All junior level staff are under the responsible charge of our senior expertise. Tetra Tech's Missoula office has approximately 32 employees including project managers, hydrogeologists, engineers, wetland and vegetation biologists, environmental scientists, technicians and GIS operators in addition to administrative support staff.

We operate hollow-stem auger drill rigs and support equipment that enables us to efficiently collect information regarding subsurface conditions, collect material samples with minimal disturbance, and install piezometers or wells. We employ a Professional Land Surveyor and have a survey crew equipped with sub-meter GPS and total station survey equipment. We operate materials testing laboratories in Missoula, Helena, Great Falls, and Billings where we are able to determine construction, as well as hydraulic, properties of earthen materials. Our engineers and construction technicians have a wealth of experience overseeing stream and wetland construction projects, as well as large construction projects involving earthwork, dewatering, and synthetic material handling.

***Support Equipment***

Successful engineering and environmental consulting today requires firms to offer a wide range of capabilities supported by a variety of updated office and field equipment. Tetra Tech's Montana offices offer GPS surveying and GIS database/mapping capabilities using ArcView, ArcCAD, and ArcInfo software. Some of the hardware and software equipment we own that supports our GIS/CAD group include technically-advanced servers and work stations, color high-speed printers and plotters, digital cameras, full AutoCAD suite of software, and Microsoft office software. Tetra Tech also offers full report preparation and production capabilities that can be distributed to our clients in any desired format.

Tetra Tech offers a comprehensive line of equipment used to support most field investigations. For restoration projects, our equipment includes 4-wheel drive trucks and ATVs, current meters, sediment samplers, specific conductivity meters, turbidity meters, and dissolved oxygen and pH meters. Tetra Tech also has preferred providers of specialty environmental equipment who can ship equipment to project sites on an overnight basis.

### 4.1.3 Subcontractor Experience

Tetra Tech will subcontract to one of three Montana equipment operators for construction of awarded projects. In addition, Tetra Tech will subcontract riparian revegetation work to one of two Wetland and Riparian area revegetation specialists. The stream and wetland restoration work will be performed by Tetra Tech, which also has registered Montana engineers who will execute engineering designs.

### *Revegetation Subcontractors*

**Rocky Mountain Native Plants Company** (RMNP) is one of the largest native plant producers in the Western US and is an important source of plant material for restoration and mitigation projects throughout the Rocky Mountain West. From the start of operations in 1998, the quality and consistency of our products and services has earned a reputation that is unsurpassed.

Current annual production of RMNP is in excess of 3 million seedlings of herbaceous species and well in excess of 500,000 woody seedlings. The plant production facility is located east of Rifle CO at an elevation of 5500 feet, with a climate very similar to that of much of Montana. The cool nights and warm days typical throughout the growing season are ideal for hardening of plant material for most sites in the mountain and intermountain west. In contrast to many plant producers, our production and experience is equally focused on a wide range of seedling sizes. Seedlings produced range from very small plugs for pre-vegetated coir production, to large containerized plants (up to 15-gallon and "ball and burlapped materials) for projects where post-project visuals and aesthetics have equal importance as restoration goals.

As the restoration market matured, RMNP began supplying installation crews that could meet the need for experienced field personnel capable of converting the vision of design professionals into the reality of a properly implemented re-vegetation project. As a consequence, RMNP offers turnkey revegetation services beginning with custom growing of native plant material through to completion of plant installation and follow-up maintenance as needed.

RMNP field crews work with a wide array of restoration and wetland consultants and designers; construction contractors; private land managers; and municipal, state, and federal agencies. These clients have come to rely on the staff at Rocky Mountain Native Plants for their assistance in assuring that the native plant component of their projects are supplied and installed within project budgets, time frames, and design parameters or regulatory requirements. RMNP crews are equally grounded in the needs of projects driven by mitigation or "consent decree" requirements with strict protocols, timelines, and design requirements; and with private habitat enhancement plantings where aesthetic considerations and landowner preferences can be as important as habitat considerations.

RMNP offers a variety of highly trained personnel specializing in services related to Stream Restoration projects. Brief resumes for four key personnel are presented below and complete resumes are in **Appendix B**.

**Sky DeBoer:** As co-founder, president/chief financial officer, and installation services manager for Rocky Mountain Native Plants, Sky brings to the team a strong understanding of the importance of close coordination between design personnel, plant production staff, and the planting services personnel. He is responsible for overall coordination of RMNP's installation contracts. He is also co-founder and president of Rocky Mountain Wetlands Company, a 198 acre wetland mitigation bank near Fairplay, CO. This project is managed in coordination with the Nature Conservancy and includes the restoration of a large peat fen and the careful management of sensitive species. Through this experience and his extensive training in wetland science and stream systems morphology , Mr. DeBoer works closely with mitigation project managers and design consultants to assure that the selected plant material will achieve their goals in a timely manner.

**Randy Mandel:** Mr. Mandel, co-founder, vice president/chief technical officer, and senior scientist for Rocky Mountain Native Plants, has spent his entire professional career of 24 years in the restoration of disturbed sites and the production of native plants and seed. He has direct experience with the propagation of over 2500 native plant species from a wide range of ecosystems. Mr. Mandel is also the co-founder of Rocky Mountain Wetlands Company – a mitigation banking firm focused on the reclamation of peat land fen in partnership with The Nature Conservancy.

Prior to Co-founding RMNP in 1998, he served as the director and lead scientist for four different Native Plant Breeding facilities within the USDA Natural Resources Conservation Service Plant Materials Program. One such facility was the Upper Colorado Environmental Plant Center, in Meeker, Colorado which during Mr. Mandel's directorship was involved in a large number of mine reclamation projects in Colorado, Wyoming, Montana, and Utah.

Mr. Mandel, through his extensive background in plant ecology and plant propagation and production, provides close coordination with design professionals in assuring that appropriate species are selected and installed in the appropriate setting in compliance with project schedules and specifications.

**Mike Thomas:** Mr. Thomas has over 20 years experience in the implementation and management of large forestry and restoration planting projects. He has detailed species specific knowledge of characteristics and requirements of native plants acquired over his 12 year tenure with his former employer Bitterroot Restoration Inc. Through his participation as client liaison for revegetation activities at the Streamside Tailings Operable Unit along Silver Bow Creek (near Butte MT) while with Bitterroot Restoration, as well as participation in various active and historic mine revegetation activities, he has considerable knowledge of contract procedures, project personnel and agency expectations of the various Montana state agencies involved in restoration activities.

His project experience combined with his knowledge of native plant production, enables him to anticipate potential conflicts between project schedules and the biological constraints on native plant production. He commonly assists clients in planning the acquisition of propagules and plant materials and developing contingency plans to anticipate schedule uncertainties. Mr. Thomas brings to the RMNP staff an extensive knowledge of the revegetation requirements and challenges of large-scale restoration projects.

**Bill LaBarre:** Mr. LaBarre has over eleven years of experience in land rehabilitation and sustainable vegetation establishment. During his seven year tenure with RMNP as Assistant Installation Manager, Bill has supervised the successful implementation of a wide variety of field projects ranging from mine revegetation, riparian and wetland restoration, and large scale habitat enhancement projects. His strong background in botany and plant taxonomy enables him to monitor the quality of plant material provided the installation crews and to assure that plants are installed in the appropriate settings as constrained by both design criteria and actual field conditions.

**Geum Environmental Consulting, Inc.** (GEC) specializes in large-scale, collaborative riparian and floodplain restoration planning for rivers and streams that involve diverse stakeholders and regulatory entities. Staff have experience implementing all phases of riparian and wetland restoration including site characterization, permitting, project design, construction and field crew

oversight, and project monitoring. We define restoration as creating site conditions to sustain ecological processes that will support project objectives. Services include:

- Ecological Restoration and Revegetation Planning
- Revegetation and Bioengineering Design and Construction Oversight
- Biological Assessments for Endangered Species Act Compliance
- Wetland Restoration and Mitigation Design, Planning and Construction Oversight
- Riparian and Wetland Assessment
- Wetland Delineation
- Fish Habitat Assessments and Surveys
- Stream and Wetland Permitting
- GIS and Natural Resource Database Application Design and Management, including Web Applications
- Grant Writing to support Restoration Projects.

GEC has the infrastructure and equipment to support all aspects of our revegetation planning and assessments. Pertinent equipment and professional tools include:

- Resource grade Trimble GeoExplorer XT GPS and associated software
- ArcGIS (two licenses)
- Microsoft Office Professional 2007 Enterprise version (compatible with 2003)
- Pendragon field data collection software
- Laser level survey equipment
- Web and ftp servers
- Professional memberships/affiliations to relevant organizations, such as Society for Ecological Restoration, Society of Wetland Scientists, and American Fisheries Society

GEC brings a variety of highly trained personnel to Stream Restoration Service projects. Mr. Thomas Parker and Ms. Amy Sacry are plant ecologists and biologists (respectively) who have specialized in riparian and wetland vegetation. On the plant installation side of the company, Mr. Parker is the Principal Ecologist and Restoration Services Manager at GEC and Ms. Sacry is a project supervisor with extensive experience with project implementation. Brief resumes for these two key personnel are presented below and complete resumes are in **Appendix B**.

**Thomas G. Parker, Principle Ecologist and Restoration Services Manager. B.S. Forestry, 1986. M.S. Resource Conservation, 1996.** Prior to joining GEC, Mr. Thomas worked closely with Dr. Paul J. Hansen, Ph.D. related to the Riparian and Wetland Research Program at the University of Montana. Throughout his career both before and during his association with GEC, Mr. Parker has been published no less than six occasions for various articles and research projects both independently and through collaborative efforts with others as related to restoration of riparian areas, wetlands, and uplands throughout western North America. Additionally, Mr. Parker has provided similar revegetation services for a very broad range of applications throughout Montana and other western states. Mr. Parker will coordinate GEC involvement in awarded projects.

**Amy M. Sacry, Project Manager. B.S. Biology 1998. M.S. Resource Conversation, 2004.** During her career with GEC, Ms. Sacry has worked on no less than 16 large scope projects related to assessment and revegetation of severely disturbed environments, particularly wetlands and riparian areas. Ms. Sacry has performed fish habitat restoration, revegetation and streambank stabilization activities for rivers and streams in Montana including the Jocko River in

western Montana, Grave Creek near Eureka, Montana and the Blackfoot River also in western Montana. Ms. Sacry will perform project management for all GEC involvement in awarded contracts.

***Equipment Subcontractors***

The three equipment contractors on our team are:

- R. E. Miller and Sons, Inc. of Dillon, Montana
- Rowe Excavation, Inc. of Dillon, Montana
- Johnson Brothers Contracting, Inc. of Missoula, Montana

**R. E. Miller and Sons, Inc**. is a full-service excavating that has served western Montana for over 40 years. Natural resource enhancement accounts for approximately sixty percent of the company's annual contracts. The remainder of R. E. Miller and Sons workload is in irrigation, road construction, and site development. Natural resource enhancement work has included river restoration, fish habitat improvement, stream bank stabilization, pond construction, and wetland construction.

The company has completed the construction of over fifty ponds, several miles of stabilization on the Madison, Beaverhead, Ruby, Jefferson, Big Hole, Red Rock, and Gallatin Rivers, and trout habitat structures and improvements throughout southwestern Montana. R. E. Miller and Sons has constructed spawning channels, bridges, fish traps, fish screens, and waterfowl habitat structures and has worked with a variety of stream forms and designed channels.

The following list illustrates only a portion of the projects R. E. Miller and Sons has completed in the last five years.

**McCoy Cattle Company- Albers Slough Enhancement-1996- Present:** To date R. E. Miller has restored over 2,000 feet of the stream. The enhancements include: riffle pool sequences, bank stabilization and habitat utilizing root wads and rock, tree revetments, willow clumps.

**Trout Unlimited – Bruce Reywinkel Spring 2007** Reconstruct approximately 2300 feet of spawning channel for the Jefferson River tributary of Parson Slough. Also reconstructed 6100 feet of Fish Creek to provide trout habitat and spawning.

**Trailsend Ranch- Ruby River Bank Stabilization, Seylor Slough Rehab. 1995- Present:** R. E. Miller and Sons has completed numerous bank stabilization and trout habitat enhancement projects for the Trailsend Ranch in Madison County, Montana. The ranch is located just south of Twin Bridges on the Ruby River. River banks along the ranch are eroding and the trout fishery was degrading. Through the innovative use of native plant re-vegetation, root wads, rock barbs, meander pools, and grade control devices, R. E. Miller has both stabilized banks and improved the fishery. R. E. Miller and Sons has been responsible for design, permitting and implementation of many projects on the Trailsend Ranch.

During the winter of 2000-2001, R. E. Miller and Sons rebuilt 5,000 feet of Seylor Slough. The slough was widened and degraded due to overgrazing. The project mission was to narrow the slough and recreate meanders, riffles and pools.

**Montana Fish Wildlife and Parks- May 2001- Prickly Pear Creek:** The design required narrowing and realigning portions of the channel, expanding channel capacity through bank sloping and installing natural revetments on outside meander bends (root wads, tree revetments, willow and sod clump transplants).

**John Osbourne Danzinger Slough Enhancement- March 2006:** The landowner hired R. E. Miller and Sons to rehabilitate 18,000 feet of the slough using riffle-pool sequences and natural woody debris habitat. Narrowing of the stream and excavating pools has resulted in a fishable stream.
See following equipment rate sheet.

Equipment available from R. E. Miller and Sons includes:

- Excavators – Komatsu 150 and 200, CAT 315 and 320.
- Articulated loader – Komatsu 320 or CAT 938
- Scraper – John Deere 860 or CAT 613
- Dozer – CAT D7f, D7Gor D6M
- Dump Trucks – minimum 10 cy
- 6 x 6 off-road articulated haul truck
- Bobcat
- Tree spade – 42 in. width
- ATV
- Powered Boat

| Name | Years of Experience |
|---|---|
| Tomas Miller | 31 |
| Wesley Eggers | 16 |
| Chris Mehring | 16 |
| Jason Wolfe | 19 |
| Earl Conklin | 21 |
| Randy Norris | 13 |
| Cliff Mantha | 6 |
| Jeff Love | 9 |
| Ron Doering | 7 |

**Rowe Excavation, Inc.**, is a moderately sized, specialized firm that performs almost exclusively stream rehabilitation and related water resource improvements. Rowe Excavating, Inc. had successfully completed many projects for the Department of Fish, Wildlife and Parks as well as other private owners and governmental agencies.

Representative projects that Rowe Excavating, Inc. has constructed include:

- Bank Stabilization and Fish Barrier Construction, Tash Ranch near Beaverhead River, Montana.
- Channel Reconstruction and Realignment, Big Spring Creek near Lewistown, Montana.
- Grade Control Structure Installation, Racetrack Creek near Anaconda, Montana.
- Channel Rehabilitation, Stone Creek near Dillon, Montana.
- Channel Realignment and Rehabilitation, Deep Creek near Wise River, Montana.

Equipment available with Rowe Excavating includes:

- Tracked Excavators from Cat 200 to 330 models.
- 18 cy 6 x 6 haul trucks
- Tracked haul trucks
- D3, D5H LGP, and D6 dozers
- Loaders – 2 to 4 cy buckets
- 14 ft. moldboard grader with ripper
- 18 cy scraper
- 12 cy dump truck
- Transport truck and trailer
- 2 in. to 16 in. pumps
- 60 in. vibratory roller

Mr. Kelly Rowe, president of the company, has over 17 years of experience in the construction field primarily related to water resource projects. Three other supervisors within the company each have from four to seven years experience.

**Johnson Brothers Contracting, Inc.** has over 30 years experience in excavation contracting. This firm has performed work on a variety of stream restoration projects for private owners and agencies. Their work experience also includes pond construction and stream relocations. Projects performed by Johnson Brothers include:

- Murphy Spring Diversion, Ovando, Montana.
- Williams Ditch Improvements, Rattlesnake Creek, Missoula, Montana.
- Clark Fork River Bank stabilization, Missoula, Montana.
- Rattlesnake Creek Bank Stabilization, Missoula, Montana.
- Cold Creek Bank Stabilization, St. Ignatius, Montana.

Equipment available from Johnson Brothers Contracting includes:

- Excavators – Komatsu 120 and 200 models
- Loader - Komatsu 350
- Scraper - CAT 613
- Dozers – CAT D7 and Dresser TD8
- Dump trucks – 12 cy.
- CAT 6 x 6 off-road articulated dump truck
- Skid Steer Loader – Bobcat 753
- Tree Spade – 42 in.
- ATV
- Powered Boats

The experience and training of Johnson Brothers contracting operators are listed below:

| Name | Years of Experience | Specialized Skills and Training |
|---|---|---|
| Larry Roberts | 26 | Commercial Drivers License, OSHA Hazardous Materials, Excavation Safety Training |
| Jody Malatare | 20 | Commercial Drivers License, OSHA Hazardous Materials, Excavation Safety Training |

| | | |
|---|---|---|
| Robert Hadac | 20 | Commercial Drivers License, OSHA Hazardous Materials, Excavation Safety Training |
| Willie Lovell | 16 | Commercial Drivers License, Excavation Safety Training |
| Marty Trott | 19 | Commercial Drivers License, Excavation Safety Training |
| Jim Pringle | 22 | Commercial Drivers License, Excavation Safety Training |

## Section 4.1.4 Previous Projects

The following are stream and wetland restoration projects completed in the last five years in which Tetra Tech was the prime contractor.

***Silver Bow Creek Reconstruction and Habitat Enhancement at the Streamside Tailing Operable Unit Stream, Silver Bow Creek/Butte Area NPL Site***

*Location:* Butte, Montana

*Clients:* Montana Department of Environmental Quality and Montana Department of Justice (Natural Resources Damage Program)

*Dates:* 2000- present

Silver Bow Creek before construction.

Tetra Tech has been a contractor to the Montana Department of Environmental Quality on the Streamside Tailings Operable Unit of the Silver Bow Creek/Butte Area National Priorities Site since 1984 and is now the engineer for the design and construction of this 25 mile long operable unit. This extensive project involves remediation of about 2.5 million cubic yards of mine and mill wastes on 1,270 acres of the Silver Bow Creek floodplain, and the reconstruction of the stream channel and floodplain. Stream design has been based on the goal of restoring a naturally functioning stream channel to the extent possible. Design requires geomorphic, hydrologic, hydraulic and sediment analysis of the stream system; determination of a natural grade for the stream; development of pool, riffle and run sections; and use of bioengineering principals to recreate a naturally functioning stream. Habitat features have been developed and constructed to enhance fish and aquatic environment in Silver Bow Creek. Features include step-pools, V weirs, random boulder placements, and log placements. Eight miles have been constructed to date and two additional miles are currently under construction. The project requires reconstruction of the floodplain with uncontaminated materials and vegetative backfill. The reconstructed floodplain is revegetated with both riparian and upland communities.

Silver Bow Creek during construction.

Silver Bow Creek two years after construction.

**Restoration at the New World Mining District Response and Restoration Project**

*Location:* Cooke City, Montana

*Client:* U.S. Department of Agriculture, Forest Service

*Dates:* 2000 - Present

Soda Butte Creek before construction.

Soda Butte Creek during construction.

Tetra Tech is the design engineer for the reclamation of the New World Mining District near Cooke City, Montana. Over 150 source areas are present in the New World Mining District, which have caused water quality degradation in several watersheds. Identification of man-created impacts is compounded by the existence of naturally occurring near-surface sulfide ore bodies which may have naturally impacted area streams. Source areas include acid discharges, tailings, and waste rock. This high altitude reclamation project involved the removal of the Rommel Tailings at the head of Soda Butte Creek from 2000 to 2001. Hydrologic and hydraulic calculations were used to determine the channel dimensions and bank and bed construction materials. After removal of the tailings, the stream was reconstructed through the site using fabric encapsulated soil banks and imported streambed material. A low flow channel was constructed within the main channel and the floodplain was reconstructed with local non-impacted material. The design of this Rosgen Classification type B4 stream was based on the morphological characteristics of the undisturbed reach immediately downstream of the tailings. Tetra Tech also performed stream restoration of Woody Creek in 2005 and additional restoration efforts are ongoing.

Soda Butte Creek immediately after construction.

Soda Butte Creek and floodplain one year after construction.

**Ontario Mine and Millsite Reclamation Project**

Ontario wetland tailings before construction.

*Location:* Helena National Forest, Helena, Montana

*Client:* U.S. Department of Agriculture, Forest Service

*Dates:* 2003

This project for the USDA Forest Service was a mine reclamation site located on the Helena National Forest. This abandoned mine and mill site impacted water quality in the Little Blackfoot River watershed. The Ontario Mine and Millsite consisted of a large waste rock dup, acid discharges, and tailings deposits that are present in and along Ontario Creek. Ontario Creek is a bull trout-rearing stream and water quality issues, including highly contaminated bed sediment in the stream, were major limiting factors to bull trout vitality in the creek. Maxim designed replacement stream bed and banks for areas in which mining impacted material was removed. Tetra Tech also designed a temporary diversion to divert a live stream during excavation and rebuilding of stream bed and banks.

Ontario creek during construction.

The project also consisted of the design of a series of seven small wetlands created by low berms to replace wetlands where mining impacted material was removed. The design included structures for control of water at the outlet of each wetland and intervening channels between wetlands. The Rosgen stream classification system was used to define reconstruction of the Class E3 tributary construction.

During construction, Tetra Tech provided part-time construction inspection services to ensure construction complied with the design specifications. Construction of the project was completed in 2002 and Tetra Tech prepared a final construction report to document construction activities and costs.

Ontario wetland and tributary after construction.

## Wetland Development Project Location Adjacent To Yellowstone River

*Location:* Big Timber, Montana

*Client:* Mr. Mark Norem

*Dates:* 2001- present

Tetra Tech is assisting a client that owns land adjacent to the Yellowstone River near Big Timber, Montana enhance, restore and create wetlands. Tetra Tech has collected a significant amount of field data on this project including surface and groundwater data, soil conditions, competed a wetland delineation on existing wetlands and conducted a functions and values assessment of existing wetlands at the site. Tetra Tech is assisting the client in developing wetland reserves on this property with the intent to place these reserves under a conservation easement and distribute these reserves to the state transportation department to compensate for wetland impacts elsewhere. Tetra Tech has acted in the following capacities on this project: baseline data collection, engineering design, environmental permit preparation, construction oversight, and agency liaison.

Wetlands before development.

Wetland ponds during construction.

Wetlands after development.

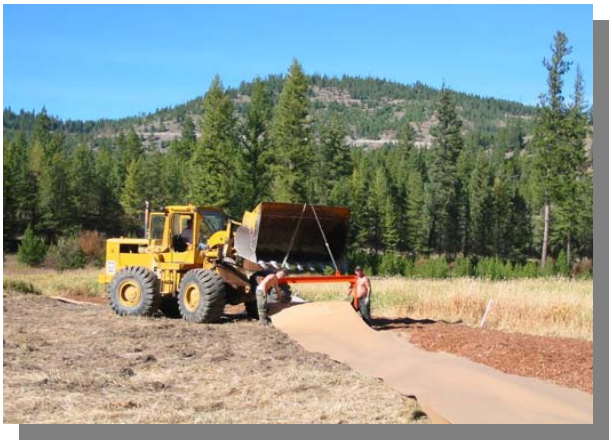
**Thompson River Riparian Restoration (Subcontractor Supplied Reference)**

*Location*: Columbia Falls, Montana

*Client:* Mr. Brian Sugden

*Dates:* 1998 – 2007

Geum Environmental Consulting, Inc. created project designs to combine (1) cardboard and wood chips and (2) polyethylene weed mat to suppress canarygrass, modify the soil nutrient budget, and promote native shrub establishment. Approximately 1,600 riparian shrubs were planted during a two year, phased revegetation effort. Results of project monitoring have shown very high survival rates (greater than 90 percent) and vigorous growth of planted riparian shrubs.



Reed canarygrass control using cardboard and mulch.

Vigorous growth on native shrubs planted in cardboard and mulch plot.

**Threemile Creek Restoration (Subcontractor Supplied Reference)**

*Location*: Missoula, Montana

*Client*: Brown Valley Ranch

*Dates*: 2005

WWC and Geum worked closely with the landowner and Tri-State Water Quality Council to prioritize restoration sites along a one-mile stretch of Threemile Creek, a major contributor of fine sediment to the Bitterroot River in western Montana. Techniques used to achieve project objectives included: re-alignment of channel away from eroding streambanks, construction of bioengineered soil lifts, pre-vegetated coir logs and mats, live willow stakes and native containerized shrubs to revegetate newly constructed streambanks, placement of large woody debris in the channel using low impact techniques to enhance salmonid habitat, and construction of two hardened water gaps to restrict cattle access to the stream.

Hardened cattle access.

Fish habitat enhancement.

Eroding bank before restoration.

Same site after restoration.

**Parson Slough Restoration Project (Subcontractor Supplied Reference)**

*Location*: Near Waterloo, Montana

*Client*: Trout Unlimited

*Dates*: 2007

R. E. Miller and Sons performed stream reconstruction services for a stream segment on a tributary to the Jefferson River. The purpose of this project was to enhance the spawning habitat for native trout species. The project focused on a 2300 feet long segment of Parson Slough. This project also included similar services for a 6100 feet long segment of Fish Creek. The Fish Creek work included complete reconstruction of the creek channel to provide spawning habitat for trout spawning and improve fishing quality. Below are a few before and after photos from the Parson Creek area.

Parson Slough area prior to reconstruction

Parson Slough area after reconstruction

Parson Slough area prior to reconstruction

**Stream and Pond Restoration Project**

*Location:* Wolf Creek, Montana

*Client:* Chris Hohenlohe

*Dates:* 2002 - 2005

Tetra Tech EM Inc. (Tetra Tech) has been providing water resources services since 2002 for a private landowner near Wolf Creek, Montana. Tetra Tech has been retained to complete field reconnaissance and evaluate restoration options for an irrigation pond and small creek channel. In addition, Tetra Tech was tasked with evaluating irrigation alternatives for a portion of the ranch and investigating the feasibility of constructing wetlands. As part of both tasks Tetra Tech was requested to evaluate water rights and permit needs associated with these projects.


Stream segment prior to reconstruction

Tetra Tech provided an engineering analysis and cost estimate report for proposed stream and pond restoration work. The overall purpose of this restoration work was to reduce subsurface water loses from the stream and pond. Two stream channel and pond lining alternatives were evaluated; one using native silt sand and a second using a geosynthetic clay liner. Projected flow loses were estimated for both alternatives and conceptual designs and costs were also prepared. Tetra Tech also completed a reconstruction and restoration of approximately 1,000 feet of stream channel. This work included preparing all necessary plans and permits, construction subcontracting and reclamation construction oversight. This work was completed in May 2003.


Stream segment during reconstruction

Log Gulch – Oxbow Ranch

Stream Flow Estimation and Channel Design.

Design of the new stream channel for Log Gulch involved several steps including:

Peak flow estimates for two through 500-year return periods were developed using the U.S. Geological Survey (USGS) method (R.J. Omang, 1992). The Log Gulch watershed was delineated on a quadrangle of the area, required regression terms such as Basin-High Evleation Index acquired and flows were estimated.

Three target flow rates were selected for the stream channel design: baseflow, 1.5-year peak flow, and 5-year peak flow. The 1.5-year peak flow is not estimated using the USGS method. The estimated 1.5-year peak flow was developed by plotting the USGS estimated peak flows on semi-log paper and developing a trend-line through the plotted data. The equation for the trend line was determined and the estimated 1.5-year peak flow calculated.

Base flow was measured using a graduated bucket and stopwatch at three locations along upper Log Gulch, in October 2002. Numerous trials were performed at each location and the average flow rate determined. Measurement of base flow did show a slight loss of flow in the channel. The base flow measured below the upper impoundment spillway was used for the channel design calculations.

A simple channel grade survey was performed on Log Gulch and the resulting channel length and grade values were used for the new stream channel design. The channel was broken into two sections based on average grade. The upper section is slightly steeper than the lower section.

A parabolic channel cross-section was selected for this project. The stream channel design accounts for safe and non-erosive passing of the baseflow, the 1-5-year peak flow, and the 5-year peak flow through both the upper and lower sections of Log Gulch. A parabolic cross-section was selected and designed in order to provide aesthetic and continuous flow for all three flow rates.

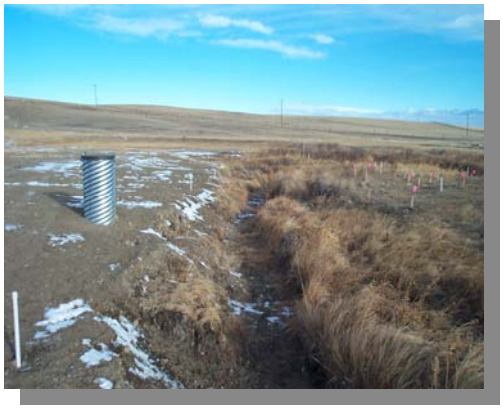
Pool and riffle calculations were also performed which provide construction guidance for natural pool-riffle spacing and required rock sizing so that flow velocities do not disturb riffle sections.

## Stream Reconstruction

*Location:* *Conrad, Montana*

*Client*: Conoco Pipeline Company

*Date*: October 2002



Before Construction

Approximately 105 lineal feet of the channel of Spring Creek was removed in October 2002 during excavation activities performed to remove soil impacted by a crude oil release. The intent of the stream reconstruction was to replace the removed channel and banks with a channel whose route, grade, dimensions and materials closely match characteristics of the original stream channel. Work was completed in accordance with a U.S. Army Corps of Engineers 303 permit. Prior to construction, the stream centerline and elevation were surveyed. Pre-excavation survey information was used to stake out the centerline and elevation of the replacement channel. Stream reconstruction took place in the following steps:

1. The stream channel was excavated through the backfill.
2. The excavation was larger than the finished channel to allow for placement of streambed material and banks.
3. Streambed gravel was placed in the excavation to a minimum depth of 6 inches and to bring the elevation of the streambed to pre-excavation elevation.
4. The lower lift of stream banks was built on both the left and right banks of the stream. Soil was encapsulated in biodegradable fabric to stabilize the channel during revegetation.
5. A second lift of stream banks was built on top of the first lift. Seed was scattered on the soil surface before the fabric was pulled back over the topsoil and staked in place. The channel's finished dimensions consisted of an approximately 6 feet top width and a completion depth matching the pre-excavated channel.
6. Backfill was placed behind the completed banks so they blended smoothly with the adjoining upland areas.

After Construction

Following completion of the channel, the flow of Spring Creek was turned back into the reconstructed channel and a temporary diversion channel was backfilled. A streamside seed mixture was used in the soil encapsulated banks of the stream reconstruction area. Adjoining areas received an upland seed mix. Inspection of the area in June 2003 indicated the reconstruction successfully resisted erosion from bankfull flow during spring runoff.

### Section 4.1.5 Staff Qualifications

This section identifies the Tetra Tech staff that may be used to work on this contract. Professional rates for each of the staff members in this section are shown in Section 5 of this proposal. **Table 4-3** summarizes stream and wetland restoration qualifications and experience of Tetra Tech staff for these projects. Tetra Tech is a full-service environmental and engineering company, and as such, we will provide all in-house engineering services for all aspects of restoration, enhancement and development projects.

The following are brief narratives for each Tetra Tech key team member, describing their roles, experience and qualifications for conducting stream and wetland restoration projects. Complete resumes are included in **Appendix A** of this proposal.

## TABLE 4-3 PERSONNEL QUALIFICATIONS & EXPERIENCE

| | | | | | PROFESSIONAL REGISTRATIONS | | | SPECIALTY TRAINING | | | | TECHNICAL EXPERTISE | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Team Member** | **Project Role/Responsibility** | **Academic Degrees** | **Total Years Experience** | **Years Experience On Similar Restoration Projects** | **Montana P.E.** | **Montana P.L.S.** | **Professional Geologist** | **Applied River Fluvial Geomorphology** | **Hydrology** | **Wetland Restoration** | **Stream Restoration** | **Project Management** | **Wetland Restoration, Enhancement and Development** | **Stream Restoration, Enhancement and Development** | **Aquatic Resource Restoration, Enhancement and Development** | **Hydrology** | **Hydraulic Analysis of Streams** | **Hydrogeology** | **Construction Inspection and Materials Testing** | **Surveying/CADD** |
| Bill Bucher, P.E., P.L.S. | Project Manager | B.S. Engineering Physics | 39 | 14 | X | X | | X | X | | X | X | | X | | X | X | | X | X |
| Walt Vering | Wetland/Aquatic Resource Restoration | B.A. Biology; M.S. Natural Resources-Wetlands | 13 | 12 | | | | | | X | | X | X | X | X | | | | | |
| Stacy Pease | Aquatic Resource Restoration | B.S. Wildlife and Fisheries Science; M.S. Watershed Management | 10 | 9 | | | | | | | | | | | X | | | | | |
| Don May | Construction Inspection/Testing | B.A. Geography | 15 | 7 | | | | | | | | | | | | | | | X | |
| Bill Fullerton, P.E. | Senior Review/Hydrology/Hydraulics | B.S. Civil Engineering; M.S. Hydraulic Engineering | 27 | 20 | | | | X | X | | X | X | X | X | X | X | X | | | |
| Peggy Bailey, P.E. | Hydrology/Aquatic Res./Wetlands | B.S. Civil Engineering; B.S. Environmental Engineering | | | | | | | | | | | | | | | | | | |
| Thad Jones | Wetlands | B.S. Forestry; M.S. Forestry | 6 | 1 | | | | | | X | X | | X | X | | | | | | |
| Mike Cormier | Project Manager (Alt.)/Riparian/Revegetation | B.S. Geology and Environmental Conservation; M.S. Land Rehabilitation | 18 | 10 | | | | | | | | X | | X | | | | | | |
| Daniel Pastor, P.E. | Senior Review (Alt.) | B.S. Civil Engineering | 16 | 16 | | | | | | | | X | | | | | | | | |
| Bradley Kucera, P.E. | Hydrology/Hydraulics/Engineering | B.S. Environmental Engineering | 7 | 1 | X | | | | | | X | | | X | | X | | | X | |
| Natalie Marrow, L.G., L.HG | Hydrology/Hydrogeology/Geology | B.S. and M.S. Environmental Geology/Hydrogeology | 13 | 13 | | | X | | X | | X | X | X | X | | X | | X | | |
| David Highness | GIS Programmer/Analyst | B.S. Anthropology, M.A. Geography | 13 | 11 | | | | | | | | | | | | | | | | |
| Daniel Earnest, P.G. | Construction Inspection/Testing | B.S. Geology | 8 | 3 | | | X | | | | | | | | | | | X | X | |
| Patricia Williams | GIS/CADD | B.S. Wildlife Biology, M.S. Geography - GIS Empahsis | 7 | 1 | | | | | | | | | | | | | | | | X |
| Chris Martin | Hydrology | B.S. Watershed Science - Hydrology; B.A. Mathematics; M.S. Mathematics | 18 | 3 | | | | | X | | X | | | X | | X | X | | | |
| James Kienholz, P.E. | Hydrology/Hydraulics/Engineering | B.S. Civil Engineering | 10 | 1 | | | | | | | | X | X | | | X | X | | X | X |

**Bill Bucher, P.E., P.L.S., Project Manager**

Mr. Bucher will be the overall Project Manager for stream and wetland restoration projects. Based in Helena, he will be responsible for being the point of contact for FWP/DOA project managers and will be responsible for identifying and assigning appropriate staff to projects. Mr. Bucher will also assist in hydrologic analyses and stream restoration designs. Mr. Bucher has 40 years of professional experience in engineering, hydrology, surveying, computer programming and management. He is currently a senior hydrologist and engineer responsible for surface water resource investigations and engineering design in addition to services related to site investigation and remediations. Mr. Bucher specializes in natural stream analysis with emphasis in geomorphic, hydrologic, and sediment transport aspect of streams. He is conversant with the Rosgen Stream Classification System and hydraulic methods of analysis for stream designs. Mr. Bucher's experience throughout his career provides solid qualifications to serve as Project Manager for this contract.

*RELATED PROFESSIONAL EXPERIENCE:*
Mr. Bucher has conducted project management, hydrologic or hydraulic engineering analysis and design, and stream restoration for the following projects:

- *Restoration Planning for the Clark Fork River – Western Montana.*
- *Remedial Stream Design and Construction of Streamside Tailings Operable Unit of Silver Bow Creek/Butte Area National Priority List (NPL) Site – Butte, Montana.*
- *Reclamation of New World Mining District near Yellowstone National Park.*
- *Sherlock Creek Placer Mine Restoration Plan – Shoshone County, Idaho.*
- *Design of Erosion Protection for Uranium Mill Tailings – New Mexico.*
- *Water Resources Baseline Study for Coal Leasing Areas – Eastern Montana.*
- *Development of Hydrologic Information and Design for Proposed Mine – Lincoln, Montana.*

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**Mike Cormier, Environmental Scientist, Project Manager**

Mr. Cormier will be an alternative overall Project Manager for stream and wetland restoration projects. Based in Helena, he will be responsible for being the point of contact for FWP/DOA project managers and will be responsible for identifying and assigning appropriate staff to projects. Mr. Cormier will also assist in hydrologic analyses and stream restoration designs. Mr. Cormier has over 30 years of experience in design of mine closures, calculation of acid soil amendment rates, revegetation design and specification of erosion control measures for slope reclamation, and has served as project manager for several mine reclamation contracts with state and federal agencies. Mr. Cormier has performed as program coordinator responsible for directing staff in evaluating hydrogeology, hydrology, soil and vegetation. Experience with abandoned hardrock mine investigations in the Rocky Mountain West includes design of environmental sampling programs; collection of waste, water and soil samples; evaluation of potential removal and remedial alternatives; preparation of plans and specifications; and reclamation construction oversight. Responsibilities include scheduling personnel and equipment, quality assurance review and maintaining project schedules and budget. Mr. Cormier provided technical support to Montana Department of Environmental Quality for the remedial investigation/feasibility studies (RI/FS) of the Silver Bow Creek/Butte Area National Priorities List Site and the Clark Fork River Operable Unit. He manages the Tetra Tech/USDA-Forest Service (USFS) Region I Comprehensive Environmental Response, Compensation and

Liability Act (CERCLA) /Resource Conservation and Recovery Act contract, and the Tetra Tech/USFS contract for the New World Mining District Response and Restoration Project. Mr. Cormier's career experience provides solid qualifications to serve as an alternative Project Manager for this contract.

*RELATED PROFESSIONAL EXPERIENCE:*
Mr. Cormier has conducted project management, hydrologic or hydraulic analysis and design, and stream restoration for the following projects:

- *Restoration Planning for the Clark Fork River – Western Montana.*
- *Remedial Stream Design and Construction of Streamside Tailings Operable Unit of Silver Bow Creek/Butte Area National Priority List (NPL) Site – Butte, Montana.*
- *Reclamation of New World Mining District near Yellowstone National Park.*

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**Bill Fullerton, P.E., Geomorphologist, Hydraulic Engineer, and Senior Review**

Mr. Fullerton will provide geomorphic and engineering services for stream and wetland restoration projects. Based in Seattle, Washington he will be responsible for review and quality control of all hydraulic designs geomorphic analysis and sediment transport calculations. Mr. Fullerton is the Program Manager for Tetra Tech, Inc., Hydrology, Hydraulics and Sedimentation Group. He has 25 years of experience in the field of hydraulics and its application to solution of civil engineering and environmental projects. His primary expertise is in the areas of hydraulics, sediment transport, geomorphology, hydrology, stream restoration and hydrologic data collection in river systems. As project manager or engineer he has completed numerous projects involving: the geomorphic and sediment transport analysis of river systems, design of stream restoration, design of channel stabilization measures, design of wetlands restoration/creation, water and sediment routing from watershed systems, reservoir sedimentation studies, river stability analysis, floodplain determination, the hydraulic design of structures in the river environment, and the design of erosion control measures. He has also managed numerous projects consisting of extensive hydrologic data collection efforts including sediment transport measurements, reservoir sediment surveys, aquatic habitat surveys, water quality sampling, channel cross-section surveys, river discharge measurements, and the installation and maintenance of flow measurement stations. Mr. Fullerton is well qualified to provide senior review of geomorphic, hydraulic design and other engineering services for this contract.

*RELATED PROFESSIONAL EXPERIENCE:*
Mr. Fullerton has conducted project management, hydrologic or hydraulic engineering analysis and design, and stream restoration for the following projects:

- *Geomorphic Assessment of Kootenai River – Western Montana and Idaho.*
- *Jordan Creek Wetlands and Channel Restoration of Jordan Creek – Sunbeam, Idaho.*
- *Blue River Stream and Wetlands Restoration – Breckenridge, Colorado.*
- *Bottomlands Restoration for Colorado Green and Gunnison Rivers – Colorado.*
- *Ecosystem Restoration for the Rio Grande – Alamosa, Colorado.*
- *Channel Restoration and Bank Stabilization for the Blue River at Downs Property – Summit*

*County, Colorado.*

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**Dan Pastor, P.E., Engineering**

Mr. Pastor will provide engineering services for stream and wetland restoration projects. Based in Boulder, Colorado he will be responsible for coordination of all engineering related efforts and will be responsible for identifying and assigning appropriate staff to projects. Mr. Pastor has 13 years of experience in environmental consulting, specializing in brownfields/voluntary cleanup site project management. He is also experienced at providing treatment process design, soil and groundwater remediation, feasibility studies, and cost evaluation. Mr. Pastor has solid qualifications to provide engineering design and support services for this contract.

*RELATED PROFESSIONAL EXPERIENCE:*
Mr. Pastor has conducted project management, hydrologic or hydraulic engineering analysis and design, and stream restoration for the following projects:

- *Asarco, Bunker Hill Mine Superfund Site Wetlands Design – Kellogg, Idaho.*

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**Peggy Bailey, P.E., Hydraulic Design and Fish Habitat Specialist**

Ms. Bailey will provide support for hydraulic engineering designs and furnish expertise to create and enhance fish habitat for stream and wetland projects. Based in Breckenridge, Colorado she will be responsible for coordination of all aquatic related services and will be responsible for identifying and assigning appropriate staff to projects. Ms. Bailey has a diverse range of experience specializing in water resources, civil engineering and land development. Her primary expertise is in hydrology, hydraulics, site planning and engineering, and infrastructure design. Ms. Bailey has assisted and overseen numerous projects involving river and site restoration, flood control, wetlands creation, hydraulic structures, stormwater runoff analysis, environmental and feasibility studies, comprehensive planning and engineering for multi-phase development, applications for permits, interfacing with municipalities, preparation of construction documents and construction observation. Ms. Bailey is experienced in the application of several hydraulic and hydrologic simulation models. These include HEC-1, HEC-2, HECRAS, HMS, SWMM and FLO-2D.

*RELATED PROFESSIONAL EXPERIENCE:*
Ms. Bailey has conducted project management, hydrologic or hydraulic engineering analysis and design, and stream restoration for the following projects:

- *Cherry Creek Sediment Basin Stabilization – Arapahoe County, Colorado.*
- *North Fork Gunnison River Restoration Project (Fish ladders) – Delta County, Colorado.*
- *Fish Passage Design and Analysis – San Juan County, New Mexico.*
- *Fish Passage Preliminary Design for Diversion Structure – Palisade, Colorado.*

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**Don May, Construction Inspection/Testing**

Mr. May will be responsible for providing construction inspection and materials testing services for restoration projects. He is a seasoned veteran of many reclamation and water-related field investigations, taking a professional demeanor to the field and producing quality results. Much of his experience has been in water data collection and field investigations, but he has recently provided construction inspection and management services for a variety of restoration and reclamation projects.

*RELATED PROFESSIONAL EXPERIENCE:*
Mr. May has provided construction inspection, testing and data collection services for the following water resources projects:

- *Field Survey and Stream Flow Data Collection, Sherlock Creek Restoration Plan – Idaho*
- *Field Investigations for Forest Service Abandoned Mine and Stream Restoration Projects – Montana and Idaho.*
- *Pump Tests for Hydrogeologic Characterization for Municipal Water Supply – Central Montana.*
- *Pump Tests for Hydrogeologic Characterization for Highway Dewatering Project – Idaho.*
- *Pump Tests for Hydrogeologic Characterization for Proposed Mine Project – Montana.*
- *Baseline Hydrological Study for Gold Mine – Western Montana.*
- *Environmental Baseline Data Collection and Surface Water Hydraulic Analyses – Western Montana.*

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### 4.1.6 Project Review Service Experience

As one of the larger, long-established environmental contractors in Montana, Tetra Tech is very sensitive to potential conflicts of interest in its work. For example, in its 20 years of work with the Montana Department of Environmental Quality on Superfund sites in the Butte-Anaconda area, Tetra Tech has never worked for the Potential Responsible Parties (PRP) associated with these sites. In addition, Tetra Tech employees have maintained an objective approach to the work through initial project execution, to a role as technical reviewers while the PRP led the project, and now again as lead firm for project execution.

All Tetra Tech personnel are required under their terms of employment to maintain confidentiality in their work. In our work for the Department of Justice Natural Resource Damage Program, many of the personnel proposed for these Stream Restoration Services have maintained strict confidentiality for our client while developing materials to be used in settlement talks or potential litigation. We have also served this client as a reviewer for their grant application program while maintaining appropriate distance from applications that could affect our activities in the upper Clark Fork River Basin.

# SECTION 5: COST PROPOSAL

## 5.0 Prime Contractor Costs

Tetra Tech prices for Stream Restoration Service projects are included in the following price sheet. These costs apply to 2007. Tetra Tech bills direct costs without a mark-up, but does not bill computer time for professional or graphics. Computer costs are included in hourly rates.

## 5.1 Subcontractor Costs

Subcontractor prices are attached following Tetra Tech's price sheet. Tetra Tech's subcontractors for the Stream Restoration Services projects are Rocky Mountain Native Plant Company, Inc., Geum Environmental Consulting, Inc., R. E. Miller and Sons, Inc., Rowe Excavation, Inc., and Johnson brothers Contracting, Inc.

## CONTRACTOR PRICE SHEET

| **CONTRACTOR NAME: Tetra Tech** | | |
|---|---|---|
| **PERSONNEL** | **NAMES** | **RATE ($/HOUR)** |
| Quality Assurance/Quality Control | Bill Fullerton, P.E. | $183 |
| Project manager/Senior Hydrologist | Bill Bucher, P.E., P.L.S. | $120 |
| Hydrologist/Geomorphologist | Bill Fullerton, P.E. | $183 |
| Hydrogeologist | Bill Craig/Natalie Marrow | $95 |
| Design Engineer | Bradley Kucera, P.E. | $95 |
| Professional Surveyor | Bill Bucher, P.L.S., P.E. | $85 |
| Survey Crew with Total Station | (2 persons) | $120 |
| CAD/GIS Operator | Patricia Williams | $60 |
| Fisheries Biologist | Walt Vering | $105 |
| Vegetation Specialist/Wetland Ecologist | Thad Jones | $75 |
| Wetland Hydrologist | Jim Kienholz | $105 |
| Aquatic Ecologist | Stacy Pease | $54 |
| Technician – (environmental/construction) | Daniel Earnest | $85 |
| Technician – (environmental/construction) | Don May | $85 |
| Clerical | Bonnie Johnson | $50 |
| Attendance at meetings | N/A | 100% |
| | | |
| **EQUIPMENT** | | Cost with prevailing wage rates |
| Four Wheel Drive ATV | | $50/day |
| Survey Level and Rod | | $30/day |
| Resource Grade GPS instrument | | $55/day |
| Crane and Reel | | $75/day |
| Current Meter | | $35/day |
| Digital Camera | | $10/day |
| Dissolved Oxygen Meter | | $20/day |
| Eh Meter | | $20/day |
| Sediment Sampler | | $10/day |
| Specific Conductivity/pH meter | | $10/day |
| Turbidity Meter | | $25/day |
| Water Level Indicator | | $15/day |
| **TRAVEL** | **STATE RATE** | |
| Mileage (standard auto) | 0.485 | $0.55/mile |
| Mileage (4 wheel drive truck | | $0.65/mile |
| Lodging | Reasonable Rate | Actual Cost |
| Meals | $27.00/day | $27.00/day |
| Hourly rate during travel | N/A | 100% |

**Notes: 1. Direct costs will be billed to the client without a mark-up.**
2. Subcontractor invoices will be marked up 7%.

## REVEGETATION SPECIALIST CONTRACTOR

| **SUBCONTRACTOR NAME:** Rocky Mountain Native Plant Company, Inc. | | |
|---|---|---|
| **PERSONNEL** | | **RATE ($/HOUR)** |
| Principal | Randy Mandel | N/A |
| | Sky DeBoer | N/A |
| Project Manager | Mike Thomas | $125 |
| | Bill LaBarre | $125 |
| Field Supervisor | Mike Thomas | $125 |
| | Bill LaBarre | $125 |
| Laborer – construction | Seasonal staff available | $50 |
| Travel | all | 50% personnel rate |

## REVEGETATION SPECIALIST CONTRACTOR

| **SUBCONTRACTOR NAME:** Geum Environmental Consulting, Inc. | | |
|---|---|---|
| **PERSONNEL** | | **RATE ($/HOUR)** |
| Principal | Tom Parker | $85.00 |
| Fisheries Biologist | Amy Sacry | $80.00 |
| Vegetation specialist /wetland | Tom Parker | $80.00 |
| ecologist | Amy Sacry | $75.00 |
| | Sarah Flynn | $75.00 |
| | Erin Belmont | $65.00 |
| Vegetation specialist – upland | Tom Parker | $75.00 |
| | Sarah Flynn | $75.00 |
| | Erin Belmont | $65.00 |
| Technicians | | |
| – construction | Same staff and rates as above; | |
| – environmental | Seasonal staff may be available | |
| – vegetation | | |
| Laborer | | |
| – construction | Seasonal staff may be available | |
| – environmental | | |
| – vegetation | | |
| Clerical | Lauren Parker | $35.00 |
| Attendance at meetings | N/A | 100% of personnel rate |
| **EQUIPMENT** | Cost/hour **with** prevailing wage rate | |
| Laser level | $25.00/day | |
| Geo Explorer XT Global Positioning System | $55.00/day | |
| Digital Camera | $10.00/day | |
| **TRAVEL** | **STATE RATE** | |
| Mileage (standard auto) | 0.485 | $0.485/mile |
| Lodging | Reasonable Rate | Reasonable Rate |
| Meals | $23.00/day | $23.00/day |
| Hourly rate during travel | N/A | $45.00 |

## REVEGETATION SPECIALIST CONTRACTOR (Continued)

| **Travel** | **State Rate** | |
|---|---|---|
| Mileage (standard auto) | 0.345 | 0.345/mile |
| Mileage (heavy duty) | | 0.75/mile |
| Lodging | Reasonable Rate | Cost plus 10 percent /day |
| Meals | $23.00/day | $23.00/day |
| Hourly rate during travel | N/A | 100 percent of personal rate |
| | | |

| **Equipment** | **Cost/hour with prevailing wage rates** |
|---|---|
| Bobcat (small loader) (minimum 1 cubic yard bucket) | $98.00/hour |
| Bobcat mobilization | $235/mobe |
| Tree spade (minimum 42” spade width) | |
| Tree spade (mobilization) | (flat rate) |
| Four wheel ATV | $79/hour |
| Snowmobile | |
| Boat (2-3 person non powered) | |
| Boat (powered) | |
| List Conservation District Areas where you will provide service: | Districts 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 |

## EQUIPMENT OPERATIONS SUBCONTRACTOR

| **EQUIPMENT SUBCONTRACTOR NAME: R. E. Miller and Sons, Inc.** | | |
|---|---|---|
| **PERSONNEL** | **NAMES** | **RATE ($/HOUR)** |
| Principal | Tom Miller | $50.00/Hr. |
| Project manager | Chris Mehring | $45.00/Hr. |
| Technicians - construction | | |
| Technicians - other (specify) | | |
| Laborer - construction | | $40.00/Hr. |
| Laborer - (specify) | | |
| Attendance at meetings | N/A | (% of personnel rate) |
| | | |
| **EQUIPMENT** | | Cost/hour **with** prevailing wage rates |
| Excavator with thumb (Komatsu 150 or Cat 315 class) | | $106.00/Hr. |
| Excavator with thumb (Komatsu 200 or CAT 320 class) | | $112.00/Hr. |
| Excavator mobilization | | $77.00/Hr. |
| Articulated loader (Komatsu 320 or CAT 938 class) (minimum 3 cubic yard bucket) | | $82.00/Hr. |
| Articulated loader mobilization | | $77.00/Hr. |
| Scraper (John Deere 860 or CAT 613 class) (11-13 yard self-loading) | | $130.00/Hr. |
| Scraper mobilization | | $75.00/Hr. |
| Dozer (CAT D7F class) D7G or D6M | | D7G - $90.00/Hr. D6M -$87.00/Hr. |
| Dozer mobilization | | |
| Dump truck (highway class with minimum 10 yd. Box) | | $57.00/Hr. |
| Dump truck mobilization | | $57.00/Hr. |
| Dump truck (6x6 off road) Cat D250D | | $98.00/Hr. |
| Dump truck mobilization | | $75.00/Hr. |
| Bobcat (small loader) (minimum 1 cubic yard bucket) | | $54.00/Hr. |
| Bobcat mobilization | | $54.00/Hr. |
| Tree spade (minimum 42” spade width) | | $82.00/Hr. |
| Tree spade mobilization | | $73.00/Hr. |
| Four wheel ATV | | $40.00/Hr. |
| Snowmobile | | |
| Boat (2-3 person non-powered) | | |
| Boat (powered) | | |
| | | |
| **TRAVEL** | **STATE RATE** | |
| Mileage (standard auto) | 0.445 | $0.545/Mile |
| Mileage (heavy duty) | | |
| Lodging | Reasonable Rate | Per diem $68.00/day/man |
| Meals | $27.00/day | |
| Hourly rate during travel | N/A | 70% |

**EQUIPMENT OPERATIONS SUBCONTRACTOR**

| **EQUIPMENT SUBCONTRACTOR NAME: Rowe Excavation, Inc.** | | |
|---|---|---|
| **PERSONNEL** | **NAMES** | **RATE ($/HOUR)** |
| Principal | Kelly Rowe | $47 |
| Labor Prep at Shop and on job site | | $33 |
| Shop Labor Rate | | $47 |
| Labor Travel Time one way travel to job | | $27 |
| Attendance at meetings | N/A | (% of personnel rate) |
| | | |
| **EQUIPMENT** | | Cost/hour **with** prevailing wage rates |
| 330 Excavator | | $143/hr. |
| 200 Excavator Big Bucket | | $123/hr. |
| 200 Excavator Standard Bucket | | $112/hr. |
| 18 Cubic Yard 6x6 Haul Trucks | | $112/hr. |
| Track Haul Trucks | | $163/hr. |
| D6 Dozer six way blade | | $97/hr. |
| D5H LGP Dozer six way blade | | $97/hr. |
| D3 Dozer six way blade | | $73/hr. |
| 4 Cubic Yard Loader | | $98/hr. |
| 2 Cubic Yard Loader / Backhoe | | $77/hr. |
| 14 foot Moleboard Grader with ripper | | $83/hr. |
| 18 Cubic Yard Scraper 621 cat | | $107/hr. |
| 12 Yard Dumptruck | | $75/hr. |
| Transport Truck and Trailer | | $83/hr. |
| 16” Crisafulli Pump | | $37/hr. |
| 16” Crisafulli Pump on a 24 hour day | | $20/hr. |
| 12” Crisafulli Pump | | $27/hr. |
| 12” Crisafulli Pump on a 24 hour day | | $20/hr. |
| 4” Portable Pump | | $120/hr. |
| 4” Portable Pump on a 24 hour day | | $8/hr. |
| 2” Portable Pump | | $10/hr. |
| 60” Vibratory Roller | | $86/hr. |
| Jumping Jack Compactor | | $52/hr. |
| **TRAVEL** | **STATE RATE** | |
| Mileage (standard auto) | 0.445 | $0.545/Mile |
| Mileage (heavy duty) | | |
| Lodging | Reasonable Rate | Depends on Location<br>$90/day includes meals |
| Meals | $26.00/day | |
| Hourly rate during travel | N/A | See labor rates above |

**Notes: 1. All materials that are purchased through Rowe Excavation, Inc. will be marked up 15% as a handling fee.**

2. All prices for equipment are based on a 40 hour work week. With any less or greater time, the price could change per hour and should be agreed upon before the hours occur.

## EQUIPMENT OPERATIONS SUBCONTRACTOR

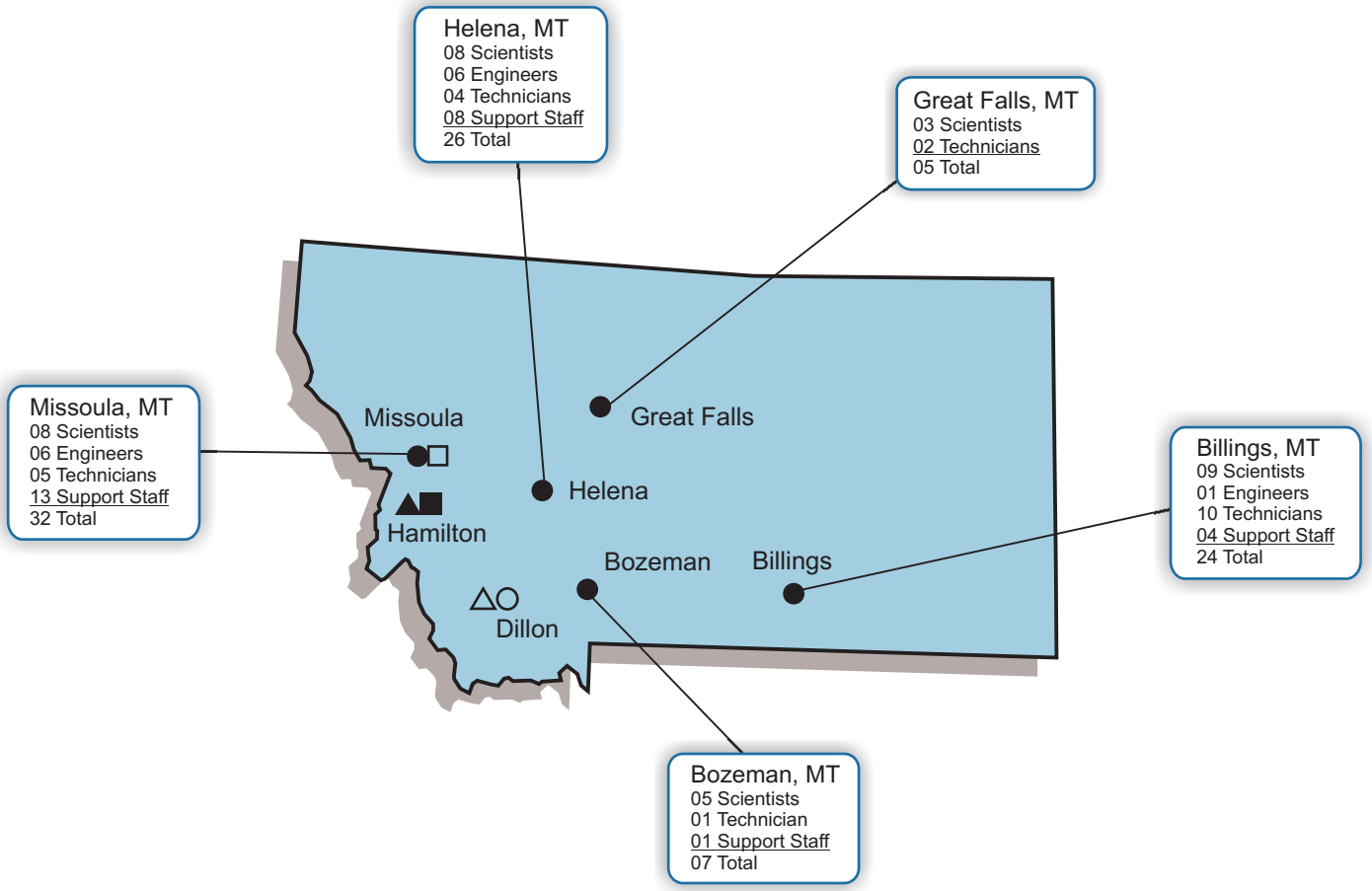
| **EQUIPMENT SUBCONTRACTOR NAME: Johnson Brothers Contracting, Inc.** | | |
|---|---|---|
| **PERSONNEL** | **NAMES** | **RATE ($/HOUR)** |
| Principal | Bob Johnson | $55.00 |
| Project manager | Bob Johnson | $55.00 |
| Foreman | Bob Hadac | $45.00 |
| Laborer | Brett Schwartzman | $40.00 |
| Laborer | Ron Hilton | $40.00 |
| Operators – Bob Hadec, Jim Pringle, Willie Lovell, Larry Roberts, Marty Trott, Jody Malatare | | NA |
| | | |
| **EQUIPMENT** | | Cost/hour **with** prevailing wage rates |
| Komatsu 120 Excavator with thumb | | $89.00/hr. |
| Komatsu 200 Excavator with thumb | | $100.00/hr. |
| Excavator Mobilization | | $75.00/hr. |
| Komatsu 350 Articulated Loader | | $85.00/hr. |
| Articulated loader Mobilization | | $75.00/hr. |
| CAT 613 Scraper | | $152.00/hr. |
| Scraper Mobilization | | $102.00/hr. |
| CAT D7F Dozer | | $99.00/hr. |
| Dresser TD8 Dozer | | $79.00/hr. |
| Dozer Mobilization | | $75.00/hr. |
| Mack 12 yd Dump Truck | | $73.00/hr. |
| Dump Truck Mobilization | | $73.00/hr. |
| CAT 6x6 Off Road Articulated Dump Truck | | $133.00/hr. |
| CAT Dump Truck Mobilization | | $107.00/hr. |
| Bobcat 753 Skid Steer Loader | | $69.00/hr. |
| Bobcat Mobilization | | $59.00/hr. |
| Four wheel ATV | | $49.00/hr. |
| Snowmobile | | $44.00/hr. |
| Boat (2-3 person non-powered) | | $36.00/hr. |
| Boat (powered) | | $39.00/hr. |
| | | |
| **TRAVEL** | **STATE RATE** | |
| Mileage (standard auto) | 0.445 | $0.545/mile |
| Mileage (heavy duty) | | $0.57/mile |
| Lodging | Reasonable Rate | $47.00/day |
| Meals | $27.00/day | $27.00/day |
| Hourly rate during travel | N/A | 75% |

## SECTION 6: EVALUATION CRITERIA

Tetra Tech understands and will comply.

# APPENDIX A
## Figures

TETRA TECH

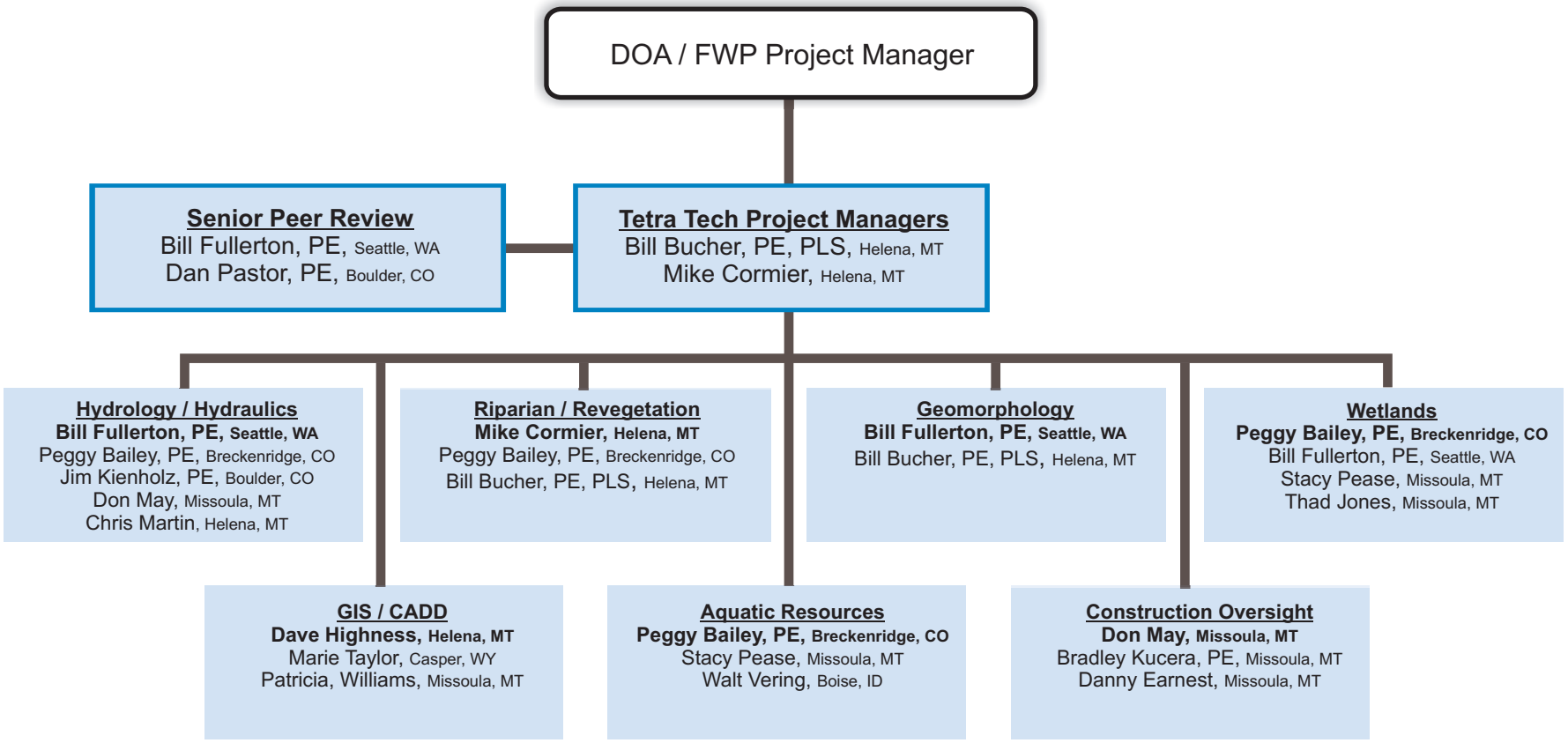



**Office Key**

- ● **Tetra Tech**
- ▲ Rocky Mountain Native Plant Company
- ■ Geum Environmental Consulting, Inc.
- ○ R.E. Miller & Sons, Inc.
- △ Rowe Excavation, Inc.
- □ Johnson Brothers Contracting, Inc.

*Additional support staff in Colorado, Washington, and Idaho are not shown on this map.

**FIGURE 4-1**
Office Location Map
Stream Restoration Services




**Revegetation Subcontractors**
Rocky Mountain Native Plant Company
Geum Environmental Consulting, Inc.

**Equipment Subcontractors and Construction**
R.E. Miller & Sons, Inc.
Rowe Excavation, Inc.
Johnson Brothers Contracting, Inc.

TETRA TECH

**FIGURE 4-2**
Proposed Organizational Chart
Stream Restoration Services

# APPENDIX B
## Tetra Tech Resumes

# PEGGY M. BAILEY, PE

*Project Manager / Senior Hydraulic Engineer*

## EDUCATION

BS, Civil and Environmental Engineering, University of Wisconsin

## REGISTRATIONS/CERTIFICATIONS

Professional Engineer: Colorado (#22660)

## EXPERIENCE SUMMARY

Ms. Bailey has a diverse range of experience specializing in water resources, civil engineering and land development. Her primary expertise is in hydrology, hydraulics, site planning and engineering, and infrastructure design. Ms. Bailey has assisted and overseen numerous projects involving river and site restoration, flood control, wetlands creation, hydraulic structures, stormwater runoff analysis, environmental and feasibility studies, comprehensive planning and engineering for multi-phase development, applications for permits, interfacing with municipalities, preparation of construction documents and construction observation. Ms. Bailey is experienced in the application of several hydraulic and hydrologic simulation models. These include HEC-1, HEC-2, HECRAS, HMS, SWMM and FLO-2D.

## PROJECT EXPERIENCE

*River Restoration*

- ***Cherry Creek Sediment Basin Stabilization, Arapahoe County, Colorado***. Project Manager for project that addresses science and data behind sediment transport and phosphorus removal for proposed sediment basin and stream stabilization measures proposed on Cherry Creek. Project objectives are to design a sediment basin and stream stabilization measures; minimize sediment load for base flows in Cherry Creek, and therefore, attached phosphorus from reaching the reservoir; minimize erosion of channel bed and banks during floods up to the 100-year; minimize operation and maintenance requirements while preserving long-term performance; and integrate and enhance existing and proposed multiple uses along Cherry Creek. (2005 to present)

- ***Blue River Restoration Master Plan, Colorado***. Project Manager for design and analysis of the Blue River restoration master plan through a 2-mile reach of river that was heavily disturbed from dredge mining for gold. Oversaw and implemented data collection efforts for monitoring flows, groundwater, and water quality; interfaced with 15-member steering committee; and oversaw and evaluated the hydrology, hydraulics, and report preparation. (2001)

- ***North Fork Gunnison River Restoration Project, Delta County, Colorado***. Project Manage for an ecosystem restoration project along approximately 15 miles of the North Fork Gunnison River. This project is funded through the US Army Corps of Engineers (USACE) 206 program and includes a Detailed Project Report and Environmental Assessment. The project goals include river reconstruction in areas that have been disturbed from instream gravel mining and headgate diversions. Preliminary alternatives include channel relocation and reconstruction, instream flow structures, fish passage over a low head dam, and bio-stabilization applications to address excessively eroding banks. Analyses include hydraulic, hydrologic, fluvial geomorphology, bank stabilization, and sediment transport. (2002 to present)

- ***Fish Passage Design and Analysis, San Juan County, New Mexico.*** Project Manager for contract with Bureau of Reclamation to perform a feasibility study and preliminary plans for a fish passage structure for endangered San Juan fish at the Public Service of New Mexico diversion structure on the San Juan River. Responsible for design and analysis of the fish ladder, flow control gates, and fish sorting facilities; hydraulic analysis; floodplain analysis; and development of alternatives for ensuring no impact to the existing diversion facilities. (1999 to present)

- ***Valley View Hospital Mudflow Analysis, Glenwood Springs, Colorado***. As Senior Hydraulic Engineer, performed mudflow analysis using FLO-2D to analyze the impacts of mudflow from two basins located immediately east of the hospital, on the hospital and the new medical office building. Services included analysis and development of design criteria for deflector berms and walls. (1999)

- ***Roaring Fork Club Mudflow Analysis, Basalt, Colorado***. As Senior Hydraulic Engineer, performed mudflow analysis using FLO-2D to analyze eight basins at the Roaring Fork Club. Considered improvements to route mud flows away from proposed improvements. (1998 to 1999)

- ***Main Street Station Channel Relocation, Breckenridge, Colorado***. Senior Hydraulic Engineer responsible for design and analysis to relocate 700 feet of Illinois Gulch through a property proposed for high density development with six condominium complexes and underground parking. Channel improvements included consideration of flood control, mitigation for wetlands disturbance, providing an amenity for the development, spawning pools at the Gulches confluence with the Maggie Pond, and maintenance. Prepared a 404 permit, condition letter of map revision, drainage plan, and channel and pond lining design for seepage control. (1998 to 1999)

- ***Wilson Mine Reclamation Design, UMETCO, Arkansas***. Project Manager responsible for vanadium mine site reclamation planning and design. Duties included stormwater runoff analysis, channel design, and flood routing through passive treatment ponds. Construction-related activities included development of a stormwater management plan using best management practices (BMPs). (1997 to 1998)

- ***Illinois Gulch Channel Improvements, Breckenridge, Colorado***. As Senior Hydraulic Engineer, prepared a channel design for 1,500 feet of Illinois Gulch for flood control and restoration. Included a low flow channel, riparian corridor with transplanting, and a flood control channel. Prepared a 404 permit, coordinated with the Town's Wetlands Restoration Ecologist, and prepared construction drawings and specifications. (1998 to 1999)

- ***Fish Passage Preliminary Design for Diversion Structure, Palisade, Colorado***. Senior Hydraulic Engineer for this Bureau of Reclamation contract. Included a feasibility study and preliminary plans for a fish passage structure at the Grand Valley Irrigation Company's diversion structure. Performed field data collection, hydraulic analysis, and project design. (1997 to 1998)

- ***Blue River Walkway Channel Relocation Design, Breckenridge, Colorado***. As Senior Hydraulic Engineer, assisted with channel reclamation design for approximately 2,000 feet of Blue River in downtown Breckenridge. Included channel design for flood control and restoration, bank protection, design of channel and pond lining, pedestrian and bike path layout and design, bridge hydraulics, and utility relocations within a highly developed urban area. Prepared construction drawings and specifications and performed construction observation. (1993 to 1995)

*Stormwater/Drainage*

- ***Stormwater Management Plan, Breckenridge Ski Area Peak 7 Expansion, Colorado***. Senior Hydraulic Engineer for a stormwater runoff plan for the Peak 7 Area expansion at the Breckenridge Ski Area. The Peak 7 base area is adjacent to a high quality and significant wetlands which is habitat for the endangered Boreal toad. Prepared a runoff analysis in compliance with the Town of Breckenridge's drainage ordinances and a water quality plan for treatment of surface water runoff prior to release into the adjacent wetlands. The plan includes development and implementation of a water quality monitoring program. (2003 to present)

- ***Stormwater Management Plan, Mountain Thunder Lodge, Vail Resorts, Breckenridge, Colorado.*** Senior Hydraulic Engineer for the stormwater plan for this 130-unit condominium development and slope-side ski trail. Included analysis of on-site runoff, detention facilities for peak flow reduction, preparation of an erosion control plan for use during construction, and preparation and application for a stormwater permit from the State of Colorado. (2005)

- ***Drainage Master Plan, Snowmass Village, Colorado.*** As Senior Hydraulic Engineer, oversaw and prepared the drainage master plan for the Base Village property in the Town of Snowmass Village. The development is located at the base of the Snowmass Ski Area and includes skier-accommodations and commercial development. Major drainage features include a by-pass system to drain upslope runoff around the project site, a subsurface drainage system, a stormwater sewer system for the plaza areas, and a floodplain analysis for Brush Creek. Offsite hydrology and runoff was modeled using the USACE HEC-HMS model. (2004)

# WILIAM H. BUCHER, PE, PLS

*Senior Engineer / Hydrologist*

## EDUCATION

BS, Engineering Physics, Cornell University, 1967

## REGISTRATIONS/CERTIFICATIONS

Professional Engineer: Montana (#4548ES, 1989), Washington (#35426, 1999), New Mexico (#15469, 2001)
Professional Land Surveyor: Montana (#4548ES, 1979)

## EXPERIENCE SUMMARY

Mr. Bucher has 40 years of professional experience in engineering, hydrology, surveying, computer programming and management. He is currently a senior hydrologist and engineer responsible for contaminant investigation and remediation, surface water resource investigations and engineering design. His projects include soil and water contaminant investigation, feasibility studies for site remediation, remedial design, design of surface water diversions, modeling and statistical analysis of data. Mr. Bucher has served as an expert witness at public hearings regarding proposed reservations of the upper Missouri River and other court proceedings. He has taught a college level course in groundwater hydrology for engineers.

## PROJECT EXPERIENCE

- ***Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Site Investigation, Montana***. As Staff Engineer, collected and analyzed data, developed database and prepared report. Work conducted as part of a remedial investigation/feasibility study at the Streamside Tailings and Warm Springs Ponds Operable Units of the Silver Bow Creek/Butte Area. Developed mass-balance models to predict the effects of remediation on the Warm Springs Ponds system. (1988)

- ***Restoration Planning for Clark Fork River, Western Montana***. Project Manager responsible for developing conceptual designs and cost estimates for floodplain replanting, streambank stabilization, and additional tailings removal. Assisted the State with development of the proposed restoration plan. The Clark Fork River is contaminated by mine wastes from the Butte and Anaconda areas and is part of the Milltown Reservoir sediments National Priority List (NPL) site. In conjunction with the remedial design, the State of Montana proposed restoration elements for the design that would further restore natural resources and prepared and reviewed cost estimates for negotiations with the potential responsible party. (2005)

- ***NPL Site Remedial Design and Construction, Butte, Montana***. Project Manager responsible for coordinating design team, preparing designs and bid packages, and supervising construction for remedial activities, construction of mine waste relocation repositories, reconstruction of the stream channel, and floodplain and site revegetation. The Streamside Tailings Operable Unit of the Silver Bow Creek/Butte area consists of 25 miles of mine-waste impacted stream channel and floodplains, which is a major source of heavy metals in the Clark Fork River. Construction cost for this 12-year project is estimated at $100 million. (1997 to present)

- ***New World Mining District Reclamation, South-central Montana***. Project Engineer responsible for collection of data, repositories design, removal procedures design for mine waste and tailings, stabilization and reclamation of an open pit, design for capping mine waste, and control of acid drainage from mines. This multi-year reclamation project near Yellowstone National Park performed by the USDA-Forest Service (USFS) involves reclamation of abandoned mine waste dispersed over three high mountain drainages in south-central Montana. The primary focus of the reclamation effort is improvement of water quality in mountain streams. Project costs are $22.5 million. (1999 to present)

- ***Red River Mining District Remediation Designs, New Mexico***. As Project Engineer, prepared two design packages for abandoned mines in the Red River mining district. The mines are being remediated as non-time critical removal actions under CERCLA. Design included reclaiming waste in place; excavation of waste with transport to a local repository, also designed by the project team; reconstruction of stream channels, and reclamation of disturbed areas. (2006)

- ***Beal Mountain Mine, Silver Bow County, Montana***. Senior Engineer for review of two designs at a partially reclaimed mine at the head of a sensitive trout stream in southwest Montana. Prepared portions of and reviewed design for a waste rock dump cap and hydrologic controls. Reviewed design and assisted with construction management on a ditch repair on a 70 acre decommissioned leach pad. (2006)

- ***Mike Horse Mine Technical Assistance, Montana***. Project Engineer consulting with the Montana Department of Environmental Quality on the Mike Horse Mine remediation project. Project involves comments on an EE/CA for remediation of a tailings impoundment and remediation of mining waste impacted stream channels and floodplains. Consulting services also include review of repository design and inspection of repository construction and evaluation of off-site locations for repository development. (2006)

- ***Milltown Dam Additional Sediment Removal, Montana***. Senior Engineer for review of an analysis of disposal alternatives for removal of contaminated sediment in addition to that required under remediation at the Milltown Dam impoundment. Sediments would remain in place behind a riprap barrier under remediation. Alternatives considered are disposal at a local repository and disposal at a commercial facility. Costs were developed for each alternative to assist the decision process to pursue additional removal. (2006)

- ***Abandoned Uranium Mine Sediment Basin Design, South Dakota***. Project Engineer for reclamation of an abandoned uranium mine that had produced large amounts of highly erosive material that impacted surrounding drainages. Reclamation required hydrologic calculations for precipitation events, determination of sediment basin sizes, and calculation of settling rates. (1992)

- ***Grant Creek Restoration and Flood Control, Missoula, Montana.*** Project Engineer for stream design to mitigate a heavily impacted stream in an urban and developing area. Provided hydraulic engineering and stream restoration expertise for the design of the restored stream. Project is slated for construction in 2007. (2006)

- ***Big Sky Coal Mine, Colstrip, Montana***. Project Engineer responsible for designing hydrologic and hydraulic components for reclamation of a coal mine. Determined runoff for various storm events for reclaimed areas, designed channel profiles and typical sections, designed spillways for embankments to be left in place, and prepared changes to Surface Water Control Plan for regulatory approval. (2006)

- ***Sherlock Creek Placer Mine Restoration Plan, Shoshone County, Idaho.*** Project Engineer responsible for developing an existing conditions report, a stream classification report, a stream monitoring plan, a cost estimate, and a restoration plan for a placer mine on USFS-administered land involving a displaced stream channel, abandoned machinery, and 20 acres of disturbance. On-site investigation included an inventory of site conditions, classification of the existing stream and a reference stream. The restoration plan included site grading of the reconstructed floodplain and realignment and design of a meandering channel. Developed a final design for construction of a new floodplain and channel. (2006)

- ***St. Joe Garnet Mine Restoration Plan, Northern Idaho.*** Project Engineer for design of reclamation work at an active public garnet-digging mine. Prepared reclamation plans for two drainages and stockpile areas that included elimination of sediment ponds, replacement of overburden, reconstruction of stream channels, stabilization of a slope failure, and revegetation. Design was based on investigation of nearby drainages with less disturbance. Also prepared a monitoring plan to measure the success of reclamation work. (2006)

- ***York Bridge Fishing Access Design and Construction Oversight, Helena, Montana***. As Project Manager, provided oversight of design and construction management for a fishing access site on the Missouri River. The site was being updated to include additional parking for boat trailers, a dock, concrete trailer pads, and a new latrine. Updated the site survey, prepared a grading plan, and designed sediment and stormwater controls, stormwater detention basins, and a concrete dock, retaining wall, and walkway. (2003)

# MICHAEL F. CORMIER

*Environmental Scientist*

## EDUCATION

MS, Land Rehabilitation (Land Reclamation & Soils), Montana State University, 1989
BS, Geology & Environmental Conservation, University of Colorado, 1979

## EXPERIENCE SUMMARY

Mr. Cormier has over 30 years of experience in design of mine closures, calculation of acid soil amendment rates, revegetation design and specification of erosion control measures for slope reclamation, and has served as project manager for several mine reclamation contracts with state and federal agencies. His background in mine reclamation and soil science enables him to participate as a technical specialist in a wide variety of projects, including mine reclamation design, soil resource analysis and prescribing soil amendments. Experience with abandoned hardrock mine investigations in the Rocky Mountain West includes design of environmental sampling programs; collection of waste, water and soil samples; evaluation of potential removal and remedial alternatives; preparation of plans and specifications; and reclamation construction oversight. Responsibilities include project coordination, scheduling personnel and equipment, quality assurance review and maintaining project schedules and budget. Mr. Cormier provided technical support to Montana Department of Environmental Quality for the remedial investigation/feasibility studies (RI/FS) of the Silver Bow Creek/Butte Area National Priorities List Site and the Clark Fork River Operable Unit. He manages the Tetra Tech/USDA-Forest Service (USFS) Region I Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) /Resource Conservation and Recovery Act contract, and the Tetra Tech/USFS contract for the New World Mining District Response and Restoration Project.

## PROJECT EXPERIENCE

*CERCLA / RCRA Environmental Site Investigations*

- ***Abandoned Mine Reclamation Projects in USFS Region 1, Montana and Idaho***. Program Coordinator project assignments follow the US Environmental Protection Agency non-time-critical removal process for site cleanup and reclamation. Direct field investigations, evaluate alternatives, analyze costs, prepare design plans and specifications, and supervise construction. Investigate potential locations for mine waste repository siting and take abandoned mine sites through the non-time-critical removal process to reclamation construction and post-construction monitoring. (1997 to present)

- ***RI/FS for Two Clark Fork River/Silver Bow Creek Superfund Operable Units, Montana***. Program Coordinator responsible for directing staff in evaluating hydrogeology, hydrology, soil and vegetation and developing and reviewing remedial action alternatives following CERCLA guidance. Reviewed and analyzed soil and water data; evaluated remedial action cost for removal and treatment of metals-contaminated soil; responded to technical comments; and supervised soil, water, and vegetation sampling and demonstration project construction. (1991 to 1997)

*NEPA Process and Documentation (EIS and EA)*

- ***Environmental Impact Statements/Environmental Assessments, Nevada, New Mexico, Idaho, and Montana***. Soil and Reclamation Specialist for projects involving gold mine expansions (Nevada and New Mexico), a phosphate mine expansion in (Idaho), and proposed pipelines and game farm permits (Montana). Projects require analysis of soil resources using soil survey information, field verification of soil types, soil classification, interpretation of soil limitations, determination of optimal soil salvage operations, and writing the soil technical portions of the environmental documents. (1995 to present)

*Abandoned Mine Reclamation*

- ***Abandoned Mine Cleanup in Historic New World Mining District, near Yellowstone National Park.*** Project Manager/Technical Specialist responsible for environmental monitoring, engineering evaluations, engineering design, and reclamation construction for all aspects of abandoned mine cleanup. Manage the following work tasks completed by Tetra Tech personnel (1999 to present):
    - Data compilation, field investigation, engineering analyses, engineering design, and construction inspection.
    - Water quality sampling, installation and sampling of monitoring wells, climate stations monitoring, geochemical modeling, completion of dye tracer studies, and characterization of

candidate waste repository sites using drilling, surface geophysics, aquifer testing, and surveying.
- Engineering evaluations/cost analyses and removal design packages.
- Extensive work to reopen 2,500 feet of underground tunnels at the Glengarry Mine and subsequently close the mine using a combination of cement grouting and plugging.
- Evaluation of alternatives for both active and passive water treatment systems for acid discharges that produce metals loading to New World Mining District streams.
- Long-term revegetation monitoring on reclaimed mine disturbances within the New World Mining District.
- Development and maintenance of a project web page.
- Public relations support to the USFS during public meetings.

- ***Coordination of Projects Tasked through Montana Abandoned Mine Reclamation Program, Montana***. Program Coordinator/Project Manager/Field Scientist responsible for scoping, budgeting, staffing, and scheduling mine reclamation projects tasked through Tetra Tech's continuing services contract with the Montana Abandoned Mine Reclamation Program. Projects required mine and mill site environmental characterization, feasibility study of reclamation alternatives, reclamation construction, mitigation of acid- and metal-impacted soils and acid mine discharges, and reclamation and revegetation designs for stabilizing mining wastes. Notable sites include Nellie Grant hardrock mine, Fergus Divide coal mining area, and hazardous mine closures throughout the State of Montana. (1992 to 2004)

## PROFESSSIONAL AFFILIATONS

American Society of Surface Mining and Reclamation, Member

## CONTINUING EDUCATION

40-hr OSHA HAZWOPER, 1987
8-hr OSHA HAZWOPER Refresher, March 2006
Medic First Aid Training for First Responder, 2006
Caps and Covers for Mine Waste, Mine Design Operations and Closure Conference, 2004
Mine Discharge Water Treatment, Mine Design Operations and Closure Conference, 2004
Best Management Practices to Mitigate Non-point Source Pollution at Abandoned Mines, 1996

## PROFESSIONAL EMPLOYMENT HISTORY

Environmental Scientist, Tetra Tech, 1989 to Present
Project Geologist, Darita Enterprises, 1981 to 1986
Project Geologist, Gustafson and Associates, 1977 to 1981

# DANIEL EARNEST, JR., PG

*Project Geologist*

## EDUCATION

BS, Geology (Hydrogeology; Chemistry minor), Georgia State University, 1997

## REGISTRATIONS/CERTIFICATIONS

Professional Geologist: Georgia (PG001693, 2003)

## EXPERIENCE SUMMARY

Mr. Earnest has over eight years of experience managing a variety of environmental projects, ranging from Phase I and II environmental site assessments (ESAs) and Resource Conservation and Recovery Act (RCRA) investigations to long-term monitoring programs. Clients include mining companies, major oil companies, large corporations, state and federal agencies, and municipalities. Tasks include mine resource evaluations, soil excavations, corrective action implementation, installation of monitoring wells and remediation systems, remedial subsurface injections, petroleum spill response, and landfill cap construction. He prepares spill prevention, control and countermeasure plans; stormwater pollution prevention plans, and conducts environmental and health and safety program audits. Mr. Earnest also provides regulatory permit review and acts as a liaison between clients and government agencies. He has groundwater modeling experience, using Domenico (1987), Bioscreen (1997), and Tennessee Technical Guidance Doc. - 015, 008.

## PROJECT EXPERIENCE

*Environmental Site Assessments*

- ***ESAs and RCRA Site Investigations, Nationwide***. As Project Manager, coordinate field activities and subcontractor management. Interpret field data, prepare reports, and facilitate correspondence between clients and government agencies. Collect groundwater, surface water, soil, and air samples. Review mine, air, tank, and stormwater permits. Monitor watershed quality. (1997 to present)

*Mine Services*

- ***Mine Resource Evaluations, Midwestern and Eastern United States***. As Project Hydrogeologist, conducted resource evaluations at mines using geologic/topographic maps, boring logs, aerials and global positioning data. (2000 to 2004)

*Hydrocarbon / Lust Investigation / Mitigation*

- ***Sampling and Remediation of Underground Storage Tanks (UST), Nationwide***. Project Manager responsible for sampling and remediation activities at 25 Georgia UST sites and nine Tennessee UST sites. Tasks included groundwater sampling, soil sampling, and slug tests. Installed multiple types of monitoring and recovery wells. Completed groundwater modeling, and conducted UST closures, remediation system operation and maintenance, and bail-down tests. Prepared CAP-A, CAP-B, CAP-Addendum and monitoring reports. Conduct Phase I and II ESAs for existing and potential UST sites in the Western United States. (1997 to present)

*Construction Materials Testing*

- ***Geotechnical Laboratory and Field Testing, Norcross, Georgia***. As Geotechnical Assistant, conducted lab analyses (standard Proctor, in situ density, moisture content and permeability tests), tri-axial strains, consolidations, resistivity tests, hydrometer tests, grain-size analysis and Atterburg limits. Field activities included geotechnical drilling, seismic refraction, in situ soil density, dynamic cone penetrometer tests, and materials testing. (1996 to 1997)

*Health and Safety*

- ***Health and Safety Program, Atlanta, Georgia***. As Health and Safety Coordinator, conducted health and safety program audits and managed office health and safety program. Scheduled, planned, and conducted monthly meetings. Organized drug screens and physicals. Maintained office personal protective equipment. Coordinated emergency response activities. (1997 to 1999)

## CONTINUING EDUCATION

40-hr OSHA HAZWOPER, 1997

8-hr OSHA HAZWOPER Refresher, March 2007
NITON XRF Spectrum Analyzer Training, October 2006
Roadway Worker Protection, 2005

## PROFESSIONAL EMPLOYMENT HISTORY

Project Geologist, Tetra Tech, 2006 to Present
Staff Hydrogeologist, Brown and Caldwell, 1999 to 2004
Hydrogeologist / Health and Safety Coordinator, Handex of Georgia, 1997 to 1999
Geotechnical Assistant, United Consulting Group LTD, 1996 to 1997

# BILL FULLERTON, PE

*Quality Control, Principal Hydraulic Engineer*

## EDUCATION

MS, Hydraulic Engineering, Colorado State University, 1983
BS, Civil Engineering, Colorado State University, 1979

## REGISTRATIONS

Registered Professional Engineer, Colorado No. 22353
Registered Professional Engineer, Utah No. 96-317681-2202
Registered Professional Engineer, New Mexico No. 13149
Registered Professional Engineer, Idaho No. 8166

## EXPERIENCE SUMMARY

Mr. Fullerton is the Program Manager for Tetra Tech, Inc., Hydrology, Hydraulics and Sedimentation Group. He has over 25 years of experience in the field of hydraulics and its application to solution of civil engineering and environmental projects. His primary expertise is in the areas of hydraulics, sediment transport, geomorphology, hydrology, stream restoration and hydrologic data collection in river systems. As project manager or engineer he has completed numerous projects involving: the geomorphic and sediment transport analysis of river systems, design of stream restoration, design of channel stabilization measures, design of wetlands restoration/creation, water and sediment routing from watershed systems, reservoir sedimentation studies, river stability analysis, floodplain determination, the hydraulic design of structures in the river environment, and the design of erosion control measures. He has also managed numerous projects consisting of extensive hydrologic data collection efforts including sediment transport measurements, reservoir sediment surveys, aquatic habitat surveys, water quality sampling, channel cross-section surveys, river discharge measurements, and the installation and maintenance of flow measurement stations.

Mr. Fullerton has over 20 years experience in the planning, design and construction of river restoration projects. This experience started with the Blue River Reclamation project (Colorado) in 1985 and continues to the present with stream restoration designs being developed for the Blackwood Creek in the Lake Tahoe Basin of California, Arkansas River and Yampa Rivers in Colorado, the Green /Duwamish River in Washington, the Anacostia and Patuxent Rivers in Maryland, and the New River in North Carolina. These projects as well as numerous flood studies, hydrologic investigations, and stream stabilization plans Mr. Fullerton has extensive knowledge of the stream characteristics throughout the United States. Some of the Pacific Northwest rivers he has experience on include the Green/Duwamish, White, Skagit, Chehalis, Cowlitz, Yakima, Sauk, Wynoochee, Big Quilcene, Kootenai, Walla Walla, Willamette, Snake and Salmon. He also is well versed in related issues in the area including wetlands, water quality control, 404 permitting, floodplain regulations, recreational use and public concerns.

## PROJECT EXPERIENCE

- ***Geomorphic Assessment of the Kootenai River, ID and MT (USACE, Seattle District) -*** Mr. Fullerton was the project manager and sediment transport specialist on this effort to assist in determining the determine the feasibility of restoring favorable substrate conditions on the Kootenai River between Libby Dam and the Canadian border. The project is part of an ESA recovery effort for the endangered Kootenai River white sturgeon.

- ***Development of Kootenai River Habitat and Ecosystem Restoration Strategies, ID and MT (USACE, Seattle District) -*** This project was conducted to develop conceptual plans for ecosystem restoration projects that can contribute to the recovery of the Kootenai River white sturgeon. Projects are being formulated through input from the Sturgeon Recovery Team and the Corps of Engineers project team.

- ***Site Investigations for Green / Duwamish Restoration Projects (USACE, Seattle District) -*** Mr. Fullerton was the Project Manager for this project involving hydrologic, hydraulic, geomorphic, sediment transport, and habitat investigations for the Green River. The project supports design of restoration and mitigation measures including Engineered Log Jams (ELJ) and gravel nourishment.

- ***Jordan Creek Wetlands and Channel Restoration Project, Chehalis National Forest, Idaho (Hecla Mining) -*** Jordan Creek is a tributary of Yankee Fork, which flows into the Salmon River at Sunbeam, Idaho. Mr. Fullerton is the Tetra Tech engineer responsible for developing a restoration plan for approximately 3,000 feet of Jordan Creek. The primary purpose of the project was to provide mitigation for approximately four acres of riparian wetlands to be disturbed by the proposed Grouse Creek Mine.. Stream habitat restoration benefited both steelhead and Chinook salmon. In developing the plan, Mr. Fullerton worked with the Walla Walla District of the Corps of Engineers, U.S. Environmental Protection Agency, U.S. Department of Agriculture, Forest Service, U.S. Fish and Wildlife Service, and State of Idaho.

- ***Bank Erosion Control for the Missouri River Below Gavins Point Dam, NE and SD (USACE, Omaha District) -*** This project involves design of innovative bank protection for two sites (B-1 and A-3) along the Missouri River between Gavins Point Dam and Ponca State park. Mr. Fullerton is the Senior Sediment Transport Specialist on this project and was responsible for geomorphologic, sediment transport and scour analysis. The project includes developing design alternatives with bioengineering and large woody debris to meet criteria for the National Recreational River status of this reach.

- ***Blue River Stream and Wetlands Restoration, Breckenridge, Colorado (Town of Breckenridge) -*** Mr. Fullerton was project manager for the design of wetland creation and channel restoration of the Blue River for the Town of Breckenridge. The project restored a one-mile reach of the Blue River that had been disturbed by dredge boat mining from 1890 to 1940. Project features included: the removal of 500,000 cu. yd. of dredge rock; the reconstruction of a stream channel, including 22 boulder grade control structures to enhance channel stability; and overbank grading to create wetlands. Approximately 10 acres of riparian wetlands were developed. The project was completed in 1991.

- ***Bottomlands Restoration for the Colorado, Green and Gunnison Rivers (1994-2001) -*** As part of the effort to save endangered fish species in the upper Colorado River basin, the Recovery Program has identified reconnection of floodplain bottomlands with the main channel as an important part of the habitat restoration component of the Recovery Plan. Mr. Fullerton is the project TT-ISG's efforts associated with the restoration of bottomland functions in the upper Colorado River basin. TT-ISG involvement has included hydrologic data collection to determine the current and potential hydrologic interaction of selected bottomlands with the main channel, hydrologic analysis, hydraulic analysis, geomorphic analysis, the design of measures to reconnect the bottomlands to the main channel, construction supervision of bottomland restoration efforts and monitoring the response of reconnected bottomlands.

- ***Ecosystem Restoration for the Rio Grande at Alamosa, CO (1998 – 2000) -*** This project is being conducted under the Corps of Engineers Ecosystem Restoration Program. Mr. Fullerton is the task manager for hydraulic, hydrologic, geomorphic and data collection efforts associated with the project. The restoration involves both stream restoration and creation of off-channel wetlands and backwaters.

- ***River Restoration for the Arkansas River through Pueblo, CO (1999-2000) -*** Mr. Fullerton is the task manager for hydraulic, hydrologic, geomorphic, sediment transport and channel restoration design aspects of the project. The project will restore 10 miles of the Arkansas River that have been impacted by levee construction, upstream water resources development and urbanization.

- ***Channel Restoration and Bank Stabilization for the Blue River at the Downs Property, Summit County, Colorado (1995-1997) -*** Mr. Fullerton was the project manager, engineer and construction supervisor for this 1,500 foot long stream restoration project along the Blue River 0.5 miles upstream of Lake Dillon. The site had been damaged, including a channel avulsion and bank erosion, during the record 1995 flood event. The project involved stabilization of eroding banks with a combination of boulders and bio-technical engineering measures, creation of a flow split structure to return flows to the main channel and control flood flows in a side channel, placement of in-stream habitat structures, creation of a stable riffle pool sequence and 404 permitting.

# DAVID HIGHNESS

*GIS Programmer / Cartographer*

## EDUCATION

MA, Geography (Cartography and GIS), University of Montana, 1998
BA, Anthropology (Archaeology), University of Alaska, 1988

## EXPERIENCE SUMMARY

Mr. Highness has 13 years of experience as a professional geographic information systems (GIS) analyst and cartographer for Tetra Tech, the State of Montana, University of Montana, and as a private consultant. He has been GIS project leader for a large economics research project and several large environmental modeling projects. He has completed many large-scale cartography, GIS and programming projects, including creation of the official Montana highway map; the Idaho Transportation Department (ITD) District 6 environmental planning GIS database; Ingham County, Michigan CACVoices Mapper; and the Idaho Water Quality Web Site. He has a working knowledge of data management, GIS and cartographic tools and programming languages used by federal and state agencies. Prior to becoming a GIS professional, Mr. Highness worked as an archaeological field technician and a supervisory field archaeologist for 10 years.

## PROJECT EXPERIENCE

*Geographic Information Systems Services*

- ***GIS Services for Environmental Reports, Montana, North Dakota, South Dakota, and Arizona***. As GIS Programmer/Analyst, assisted with cartography and GIS analyses for environmental assessments (EAs) and environmental impact statements (EISs). Major projects include:
    - Bitterroot National Forest Weed EIS: Montana (2001 to 2003)
    - Bureau of Land Management (BLM) Blackleaf Canyon EIS: Montana (2003 to 2004)
    - BLM Butte Field Office Resource Management Plan: Montana (2004 to 2006)
    - Helena National Forest Weed EIS: Montana (2002 to 2004)
    - Western Area Power Authority EAs: Montana and North Dakota (2002 to 2004)
    - Florida Power EAs: North Dakota and South Dakota (2004 to 2005)
    - BLM Yuma Field Office Resource Management Plan: Arizona (2004 to 2006)

- ***GIS in Support of Mining Services and Mine Remediation Services, Idaho, Montana, Colorado, Wyoming, Africa, and South America***. GIS Programmer/Analyst responsible for compiling and analysis of data and maps for mine and mine related projects. Major projects include:
    - Aerial Image tile preparation and soils layer preparation for ColoWyo Coal Mine. (2006)
    - Assisted with data layer creating and mapping on Newmont Gold Mining Company projects from Africa to South America. (2003 to 2006)
    - Assisted with remediation design for Silver Bow Creek Streamside Tailings: Montana (2000)
    - Assisted with site monitoring and remediation design for USDA-Forest Service (USFS) New World Mine: Montana (2000)
    - USFS Miscellaneous Mine Remediation Projects: Ontario Mine, Montana; Emerald Creek, Idaho; Carpenter Creek, Montana; and Tenmile Creek, Montana (2000)

- ***GIS Support and Database Analysis for Pre-Disaster Mitigation and Hazard Assessment Projects, Montana.*** GIS Programmer/Analyst responsible for database preparation, GIS analysis and cartographic services in conjunction with planning projects.
    - Montana Statewide All Hazards Assessment (2002)
    - Pre-disaster Mitigation plans for 10 jurisdictions (2002)

- ***Web-enabled Mapping Applications, Montana, Idaho, and Michigan.*** As GIS Programmer, assisted with system design, programming and implementation on many interactive web site development projects. Many applications include extensive database query functions, file upload, form submission, and dynamic map query. Application development environments include Microsoft Active Server Pages, Java Server Pages, and Visual Studio ASP.Net. Client formats include HTML, Dynamic HTML, JavaScript, CSS and XML/XSLT. Server environments include Windows Servers, Linux Servers, Internet Information Server, Apache Web Server, Tomcat Servlet Engine, SQL Server, Oracle, ESRI Spatial Database Engine and ESRI ArcIMS. Major projects include:

- Montana Department of Environmental Quality (MDEQ) Clean Water Act Information Center 2006 303d and 305b water body clearinghouse (2006)
- Gallatin County Map Engine: Montana (2002)
- Montana Natural Heritage Program Element Occurrence Portal (2005)
- Montana Department of Public Health and Human Services Syndromic Surveillance System (2004)
- New World Mine Sampling and Document Library Database, USFS: Montana (2000)
- Ingham County CACVoices Map Portal: Michigan (2003)
- Idaho DEQ Total Maximum Daily Load Water Body Clearinghouse (2003)

- ***ESRI ArcObjects ArcGIS Applications, Idaho and Montana***. As GIS Programmer, assisted with system design, programming and implementation on many ArcGIS customization projects including creation of custom ArcGIS Extensions. Application development environments include Microsoft Visual Basic for Application and Microsoft Visual Basic. Major projects include:
  - BioSummatic GIS, USFS (2006)
  - Fire Incident Mapping Tool, USFS (2006)
  - Automated Lightning Mapping System, USFS (2004)
  - Traffic Survey Station Application, ITD (2002)

- ***Large Scale Cartographic and GIS Data Conversion Projects, Idaho, Montana, and Washington***. As GIS Programmer/Analyst, assisted with creation of large scale cartographic projects and conversion of data from analog to digital format. Major projects include:
  - GIS database and global positioning surveys, ITD District 6 (2001 to 2004)
  - Digitized three county soil surveys, Washington Natural Resource Conservation Service (NRCS) (2001)
  - Digitized sixth code drainage basins, rectified 150 aerial photos of the Upper Yellowstone River, and digitized range health polygons in the Badger Two Medicine area, Montana NRCS (2000)
  - Cartographic services for the 2001 Official Montana State Highway Map (2000)
  - Cartographic services, MDEQ Carbon Monoxide Emissions Project (2000)
  - Statewide parcel maps, block management area maps, and general maps, Montana Fish, Wildlife and Parks (2000, 2003)
  - Cartography for Regional Economies Assessment Database, University of Montana (1998)

- ***Social Sciences Research Lab Operations, Missoula, Montana.*** As Research Assistant, set policy, supervised staff, and maintained the 40-station computer lab at the University of Montana. Worked with university instructors and students to schedule classes and study times within the lab. Provided technical support to students and instructors on the use of the university network and a variety of statistical, GIS and mapping programs. (1996 to 1997)

*Archaeological Services*

- ***Archaeological Surveys, Wyoming, North Dakota, Ohio, Montana, Commonwealth of the Northern Mariana Islands and Guam***. District Archaeologist/Crew Chief/Archaeological Technician responsible for archaeological survey crews. Maintained survey notes, photo logs, maps, and site records, and provided logistical oversight of field projects. Wrote and submitted project reports and site records. Evaluated sites for significance using the criteria given in the National Register of Historic Places. Major projects include:
  - Archaeological survey prior to seismic testing on a large natural gas field: Wyoming (1992)
  - Historic housing survey prior to road widening work: Fargo, North Dakota (1993)
  - Site relocation and site recordation: Mariposa District, Sierra National Forest (1993)
  - Archaeological surveys: Preble County, Ohio (1993)
  - Dept. of Transportation highway projects and BLM land exchanges: Montana (1992 to 1994)
  - Archaeological surveys and site testing: Commonwealth of the Northern Mariana Islands and Guam (1990 to 1992)
  - All cultural resource evaluations during field season: Fisher River District, Kootenai National Forest, Montana (1989)

# THAD E. JONES

*Environmental Scientist*

## EDUCATION

MS, Forestry (Range Resources Management), University of Montana-Missoula, 2005
BS, Forestry (Range Resources Management), University of Montana-Missoula, 1997

## EXPERIENCE SUMMARY

Mr. Jones has five years of experience in biology and environmental sciences involving vegetation and noxious weed inventories, riparian and upland monitoring, grazing allotment administration, noxious weed control. Mr. Jones is also a technical writer, has designed vegetation restoration plans, and has been a resource specialist on environmental impact statements (EIS) in Colorado, Nevada and Montana. In addition, he has a strong background in GIS analysis and modeling, and has designed several geodatabases for resource management.

## PROJECT EXPERIENCE

*NEPA Process and Documentation (EIS)*

- ***Deer Creek Shaft and E Seam Methane Drainage Wells EIS, USDA-Forest Service (USFS), Paonia, Colorado.*** Environmental Scientist contributing to preparation of the Deer Creek EIS. The EIS focused on the effects of developing a ventilation shaft and escapeway and installing 168 methane drainage wells. Served as member of an interdisciplinary team of resource specialists. Assessed and described the current condition of upland and riparian vegetation, noxious weeds, and threatened and sensitive plant species within the project area, analyzed impacts of the proposed alternatives, and wrote the vegetation section of the EIS. (2006 to present)

- ***Montana Alberta Tie Transmission Line EIS, Northern, Montana.*** Environmental Scientist responsible for assessing and describing the current condition of upland and riparian vegetation, noxious weeds, and threatened and sensitive plant species within the project area, analyzed impacts of the proposed alternatives, and wrote the vegetation section of the EIS, focusing on the effects of building a 240/230 kV transmission line. (2006 to present)

- ***Leeville Supplemental EIS, Carlin Trend, Nevada.*** Environmental Scientist responsible for conducting a supplemental assessment and analysis of the cumulative effects of development of an underground gold mine on upland, riparian and wetland vegetation, noxious weeds, and threatened and sensitive plants. (2006 to present)

- ***New Melones Lake Resource Management Plan, USDI Bureau of Reclamation, California.*** Environmental Scientist assisting with compilation of wildland fire management issues and current wildland fire management direction for the Resource Inventory Report in support of the Resource Management Plan/EIS for the New Melones Lake Area. (2006)

*Vegetation Inventories/Monitoring*

- ***New World Mine Reclamation Monitoring, Park County, Montana.*** Environmental Scientist responsible for monitoring revegetation at this high elevation site in the Beartooth Mountains. Evaluated percent vegetation cover, percent total ground cover, and species diversity and composition using the point-quadrant method. (2006)

- ***Baseline Vegetation Mapping, Proposed Uranium Mine, Southeast Utah***. Environmental Scientist on a team conducting baseline vegetation and soils characterization across the project site using a system of transects. Resultant data was synthesized and vegetation communities and soil units were mapped across the project site. Surveys for rare plants and noxious weeds were also conducted. (2006)

- ***Revegetation Monitoring of Reclaimed Mining Lands, Southwest Wyoming***. As a Staff Biologist, monitored over mine reclamation transects established on BLM lands. Identification of numerous grass cultivars along 25-meter line intercept belt transects was necessary to ensure accurate estimates of species diversity necessary to meet bond release. (2006)

- ***Wetland Identification and Delineation, Northwest Montana.*** As Staff Biologist, surveyed wetland vegetation to support wetland delineation for a transmission line upgrade project. (2006)

- ***Wetland Monitoring, Sweet Grass County, Montana.*** Environmental Scientist responsible for monitoring a constructed wetland mitigation bank and producing a technical report on the project success and recommendations. (2006)

- ***Riparian Inventories, Montana.*** As a University of Montana Research Assistant, investigated floodplain vegetation changes associated with disturbance on the Grant-Kohrs Ranch National Historic Site. Performed riparian inventories to determine the impacts of historic livestock grazing versus mine-tailing deposits. Assisted in antelope bitterbrush (Purshia tridentata) studies. (2000 to 2001)

*Vegetation Studies / Management*

- ***Revegetation Plan Design, Sublette County, Wyoming***. Environmental Scientist responsible for design of upland planting and seeding prescription for the revegetation of an abandon natural gas well production site. (2006)

- ***Black Butte Coal Mine Soil Loss Model, Southeastern Wyoming.*** Environmental Scientist responsible for preparation of RUSLE soil loss model simulations on reclamation sites on the Black Butte Mine. (2006)

- ***Sagebrush Biome Ecological Models, Montana.*** As a University of Montana Research Assistant, performed a literature review of Great Basin sagebrush species and identified critical synecological and autecological attributes of sagebrush for computer modeling. Reviewed existing modeling systems' treatment of sagebrush community types. (2005)

- ***Uinta National Forest Noxious Weed Management Program, USFS Region 4, Utah.*** USFS Rangeland Management Specialist responsible for supervising the Heber Ranger District, Uinta National Forest Noxious Weed Management Program. Treated 800 acres of target weed infestation using various methods. Collaborated with Weed Management Area (WMA) stakeholders (county, dept. of wildlife, private individuals) to organize two community/WMA workdays for noxious weed control. (2005)

- ***Rangeland Monitoring Program, Heber Ranger District, USFS Region 4, Utah.*** Supervisor for nested frequency and riparian greenline studies. Prepared trend summaries. Assisted with cattle and sheep allotment management, including billing, annual operating instructions, term grazing permits, allotment inspections, forage utilization, and management of INFRA range database. (2005)

- ***Elk / Cattle Forage Use Conflicts, Elkhorn Mountain, Montana.*** As Environmental Scientist, assisted with draft report construction. Conducted extensive review and summary of historic data. Consulted with GIS Specialist about needs and layout for draft report maps and data. (2004)

- ***Investigation of Noxious Weed Treatments, Western Montana.*** Botanist charged with supervising four botanists investigating the effects of various combinations of fire and herbicide treatments on target noxious weeds in Western Montana. (2001)

*Geographic Information Systems Services*

- ***GIS Data Processing, USFS Region 1, Missoula, Montana***. Environmental Scientist responsible for developing a protocol to migrate USFS grid VMAP data into the disturbance model Simulating Patterns and Processes at Landscape Scales (SIMPPLLE). Developed a technical user's manual detailing the process. (2006)

- ***Vegetation Modeling, USFS Region 1, Missoula, Montana***. Environmental Scientist responsible for organizing and transferring complex GIS data into standard format and populated correct attributes compatible with Simulating Patterns and Processes at Landscape Scales (SIMPPLLE) model. Verified simulation results from the SIMPPLLE landscape dynamics simulation system. Assisted in development and refinement of non-forest species successional pathways and disturbance responses. (2006)

# JAMES M. KIENHOLZ, PE

*Project Civil Engineer*

## EDUCATION

BS, Civil Engineering, Colorado State University, 1996

## REGISTRATIONS/CERTIFICATIONS

Professional Engineer: Colorado (#37743, 2003)

## EXPERIENCE SUMMARY

Mr. Kienholz has ten years of experience in environmental consulting, specializing in remedial design, and construction oversight. He is also experienced in cost estimating; spill prevention, control and countermeasures, and geotechnical, hydrologic, and hydraulic modeling. He is also skilled in AutoCAD Land Development Desktop.

## PROJECT EXPERIENCE

*Remedial Design*

- ***BHP Copper Inc., San Manuel Plant Closure Project, Pinal County, Arizona***. Development of cost estimates for the various contaminated soils reclamation alternatives for the BHP Smelter.

- ***Asarco Incorporated, Jack Waite Mine Site, Engineering Evaluation/Cost Analysis***. Conducted preliminary slope stability analyses, regrading plans, HELP modeling, hydrologic and hydraulic calculations and review and development of cost estimates for the various reclamation alternatives.

- ***Asarco Incorporated, Apache Tailing Impoundment, Leadville, Colorado***. Review and development of remediation design including regrading plan, reroute and design of sewerline, evaluation of surface water flow, and stormwater drainage control design.

- ***Asarco Incorporated, Arkansas Valley Smelter and Colorado Zinc-Lead Mill Site, Leadville, Colorado***. Review and development of remediation design including excavation and consolidation of contaminated soils, evaluation of surface water flow, and stormwater drainage control design.

- ***Butte Priority Soils Operable Unit (BPSOU) (Silver Bow Creek/Butte Area Superfund, western Montana)***. Review and development of cost estimates for the various reclamation alternatives for the Phase II Remedial Investigation/Feasibility Study.

*Construction Oversight*

- ***Copper Range Company, White Pine, Michigan***. Design, cost estimation, and construction oversight for the installation of a geosynthetic final cover for the On-Facility Response Action Repository. Coordinated with liner installation contractor and earthwork contractor to resolve design modifications and solve other various problems.

- ***Talache Mine Tailings Site near Atlanta, Idaho***. Construction oversight for the installation of seep management control systems. Coordinated with various government agencies, local landowner and the contractor in order to resolve design modifications, additions or conflicts, which arose in the field.

- ***Union Pacific Railroad, Bunker Hill Superfund Site, Kellogg, Idaho***. Construction oversight for the installation of access controls. Coordinated with various government agencies and the contractor in order to resolve design modifications, additions or conflicts, which arose in the field. Adhered to a budget and schedule on tasks, anticipated problems in the schedule and budget in advance, and pursued solutions to conclusion.

- ***R & R Super Service, Arvada, Colorado***. Construction oversight for the installation of an air sparging/soil extraction system; assisted in initial optimization of the system; and support of the operation and maintenance of the system.

- ***Asarco Incorporated, Apache Tailing Impoundment, Leadville, Colorado***. Construction oversight for implementation of the remedial design which included air monitoring, rerouting a sewerline, regrading mine tailings, rechannelization of California Gulch and installation of a geocomposite clay liner and geocomposite drainage layer cover system. Responsibilities also included routine inspections of best management practices (BMPs) for stormwater and erosion control in accordance with the Storm Water Management Plan, and coordination of quality control testing and surveying.

- ***Avis Rent-A-Car Systems, Inc., Denver International Airport***. Construction oversight for the repaving of concrete and asphalts portions of the parking lot damaged by expansive soils.

*Spill Prevention, Control, and Countermeasures*

- ***Cendant Car Rental Group, Inc***., Western US. Conducted site visits and developed SPCC plans for seven rental car facilities located near airports in Colorado, Minneapolis, Nevada, Utah and Idaho.

- ***The Schwan Food Company, Midwestern US***. Managed project to develop SPCC plans for six Schwan's food processing facilities located in Minnesota, Kansas, Texas and Kentucky. The facilities make food products ranging from frozen pizza to ice cream.

*Water Resources and General Civil Engineering*

- ***Kaiser Mead NPL Facility Near Mead, Washington***. Assisted in a design which included the replacement/rehabilitation of a portion of the water pipe system.

- ***Coeur Silver Valley, Inc. Galena Mine***. Assisted in the preliminary design and foundation evaluation for a 50-feet diameter dry sand tank.

- ***Panoche Creek, California***. Assisted in design of reinforced concrete structures. Developed stream cross-sections from surveyed topography and entered and analyzed data for the design of several culverts into HEC-RAS (River Analysis System) developed by the U.S. Army Corp of Engineers.

- ***Copper Range Company, White Pine, Michigan***. Assisted in design of structures. Hydrologic modeling for the design of a principal pipe spillway and emergency spillway for multiple unit tailings impoundment facility using HEC-HMS (Hydrologic Modeling System) developed by the U.S. Army Corp of Engineers.

- ***Coeur D'Alene Mines Corporation***. San Bartolome, Bolivia. Conducted water balance modeling on Lahka Chaca Reservoir for various mine make-up water requirements.

- ***Talache Mine Tailings Site near Atlanta, Idaho***. Slope stability analysis for the run-on control channel embankment near the Upper Tailings Pile using XSTABL.

- ***Copper Range Company, White Pine, Michigan***. Slope stability analysis for tailing pond embankments using XSTABL.

- ***Copper Range Company, White Pine, Michigan***. Water balance analysis modeling for the design of a final cover for the On-Facility Response Action Repository using the HELP model (Hydrologic Evaluation of Landfill Performance).

- ***Chelsea Catering, Denver International Airport***. Designed a 3,500-gallon grease interceptor upgrade for a catering facility. Assisted in coordination with City of Denver, Denver International Airport, owner and the contractor in order to implement the design and construction.

*Structural Engineering*

- ***BHP Copper Inc., San Manuel Plant Closure Project, Pinal County, Arizona***. Designed permanent shaft closures for nine mine shafts using a reinforced concrete slab, an unreinforced concrete plug or a polyurethane foam plug.

- ***The Boeing Company, Washington.*** Designed and produced engineering drawings for numerous components on the fuselage forward section and passenger floors of the 737 next generation airplanes. Worked closely with stress engineers and several manufacturing groups. Designed components and installations using 3D modeling.

# BRADLEY L. KUCERA, PE

*Environmental Engineer*

## EDUCATION

BS, Environmental Engineering (Statistical Methods minor), Montana Tech of the University of Montana, 2000

## REGISTRATIONS/CERTIFICATIONS

Professional Engineer: Montana (#14624, 2006)
Licensed Engineer: Nevada (#17508, 2006)
State Water-Right Surveyor: Nevada (#1170, 2006)

## EXPERIENCE SUMMARY

Mr. Kucera has over six years of experience working in environmental investigation and corrective action. He has an excellent understanding of environmental law and regulation and the intricacies of hazardous waste manifesting and disposal. He is familiar with Indiana Voluntary Remediation Program (VRP); Nebraska Remedial Action Plan Monitoring Act (RAPMA); Resource Conservation and Recovery Act (RCRA); Comprehensive Environmental Response, Compensation and Liability Act; and US Environmental Protection Agency (EPA) Brownfield Redevelopment Program requirements. Project assignments include design and installation of remediation systems, design and modification of water and wastewater treatment systems, hazardous waste and air contaminant permit application, design and construction of hazardous waste stabilization containers, and system optimization analysis. Mr. Kucera has developed sampling and analysis; remedial action; corrective action; quality assurance; and spill prevention, control and countermeasure plans. He has provided demolition and decontamination oversight, including diligence investigations in conformance with applicable Indiana, Colorado, Ohio, Nebraska, Nevada, Wyoming, Utah, and California regulatory entities. Mr. Kucera has performed industrial Phase I site assessments, managed air emission compliance projects, and directed field operations in roles ranging from field technician/support to Engineer of Record and health and safety coordinator.

## PROJECT EXPERIENCE

*Remediation System Design and Implementation*

- ***High Density Polyethylene (HDPE) Liner Installation and Heap Leach Pad Cap Repair, Beal Mountain, Montana***. As Senior Staff Engineer, designed and provided construction oversight for installation of approximately 84,000 square feet of textured 60-mil HDPE liner (including foundation fabric, subgrade drainage system, and drop inlet piping penetration) within a problematic drainage channel on decommissioned heap leach pad. Construction management consisted of access coordination with adjacent land owners; client progress reporting and contractor scheduling; invoice review, approval, and negotiations; and field quality assurance/ quality control (third party inspection of channel grade survey, peel testing, dual wedge channel pressure/vacuum testing, and as-built construction records). (2006)

- ***Soil and Groundwater Remediation, Automotive Component Manufacturing Company, Hastings, Nebraska***. As Project Engineer, performed the remedial design and developed technical specifications and drawings for soil and groundwater remediation to conform to the Record of Decision under the guidance of EPA and Nebraska Department of Environmental Quality. Assisted with selection of remediation equipment suppliers and contractors. Managed implementation of remedial design implementation and coordinated construction activities. (2001)

- ***Engineering Support, Rawhide Regional Landfill Permit Application, Mineral County, Nevada***. As Environmental Engineer, provided engineering support and design related to application for a Class I municipal solid waste landfill operation permit. When completed, this landfill will be the largest landfill to date in the State of Nevada. Work included hydraulic diversion calculations and design; phasing plans; and cover, closure, and gas collection system designs. (2005 to 2006)

- ***Remediation Systems Design and Implementation, Grand Teton National Park, Wyoming.*** Remediation Engineer for design and implementation of five remediation systems. Performed design review and approval, construction oversight, system start-up and shake-down, operation and maintenance, system optimization, and remedial progress reporting to the regulatory agency. These systems included varying configurations of in situ submerged oxygen curtains, ozone sparge, soil vapor

extraction (SVE), SVE-enhanced free product recovery coupled with thermal/catalytic oxidizer, monitored natural attenuation, and air sparge coupled with bioventing systems. (2004 to 2006)

- ***Remediation Systems Design and Implementation, Nebraska***. As Remediation Engineer, designed, contracted, and managed construction and implementation of SVE, catalytic oxidation and acid gas scrubber system, and a new dedicated remedial treatment structure. Managed all aspects of the soil remediation system. Designed a chemical oxidation system for in situ application of potassium permanganate and sodium persulfate for the groundwater component of the site remediation. Created work plan to pilot test injection of methane for use as a carbon source in effort to promote cometabolism of 1,1,1-TCA within an aquifer formation. Responsible for application to RAPMA. (2001 to 2004)

- ***Groundwater Recovery and Treatment System Decommissioning, Shelbyville, Indiana***. As Project Engineer, assisted client with selection of the environmental contractor and performed on-site management of decommissioning activities related to large scale groundwater recovery and treatment systems, including recovery wells, recovery well vault, groundwater conveyance network, air stripping tower, and discharge system. Responsible for oversight, labor management, invoicing, salvage inventory, storage, and project schedules. Conducted field operations for Phase II and III site investigations. Performed periodic groundwater and soil gas sampling and reporting subsequent to system decommissioning. (2002)

- ***Underground Storage Tank (UST) and Landfill Closure, Indiana***. As Project Engineer, designed sampling schedules, coordinated removal events, negotiated contracts and service agreements, and provided oversight and consultation on closure events for USTs, landfills, and plume recovery efforts. (2002 to 2003)

- ***Remediation System Installation and Decommissioning, Confidential Clients, Ohio, Indiana, Illinois and Nebraska***. As Project Engineer, providing consulting services for installation and decommissioning of air stripping towers; slurry walls; and SVE, seepage collection, and dewatering systems for clients in pharmaceutical manufacturing, aerospace technologies, and automotive industries. (2001 to 2003)

- ***Groundwater Treatment System Design Modification, Federal Highway Service Administration, Denver, Colorado***. As Project Engineer, designed modification to groundwater treatment system (1,1,1-TCA) to reduce 1,4-Dioxane concentrations and achieve preliminary remediation goal discharge levels. (2005)

- ***Treasure State Endowment Program Application and Preliminary Engineering Report Technical Reviews, Montana.*** As Project Engineer, provided technical review of preliminary engineering report and grant applications for small communities in north-central and northwestern Montana. Applications were made to the grant program to support upgrades for aging community infrastructures. (2006)

- ***Retail Facility Wastewater Treatment and Disposal System Design, Hamilton, Montana.*** As Project Engineer, provided consulting services and designed wastewater treatment and disposal systems for a large retail facility north of Hamilton. Project included design and permit treatment for high-strength wastewaters with pretreatment and level two nutrient reduction technologies to reduce raw wastewater to residential strength prior to disposal in elevated sand mound system. (2006 to present)

*Air Quality*

- ***Air and Wastewater Emission Permitting, Testing, and Reporting, Hastings, Nebraska***. As Remediation Engineer, modified clients' Title V air permit and developed emission testing protocols for air compliance as related to catalytic oxidation and acid gas scrubbing systems. Responsible for application and modifications to temporary discharge permits governing disposal of air and waste water generated from pump testing, pilot testing, and subsurface investigations. Managed air projects, which consisted of permit applications to install and permit to operate an air contaminant source, Title V permits, emission inventories, and emission reports. Negotiated sampling methods and procedures with state regulatory bodies. Performed emission testing and reporting. (2001 to 2003)

# T. CHRISTOPHER MARTIN

*Hydrologist, Statistician, Multimedia Specialist*

## EDUCATION

MS Coursework, Mathematics, Montana State University, 1987, 88
Teacher Certification/BA Equivalent, Mathematics, Carroll College, 1984
BS, Watershed Science - Hydrology, Colorado State University, 1980

## EXPERIENCE SUMMARY

Mr. Martin has over 18 years of experience as a professional hydrologist. Mr. Martin's experience includes stream channel construction, water balance systems, sedimentology, hydrometeorology, mine drainage systems, storm water management, stream flow monitoring, and flood estimation. He also has over 10 years of experience in computer programming, including BASIC, PASCAL, HTML, Perl, JavaScript, VB-script and Lingo. In addition, Mr. Martin has more than 11 years of experience in technical and commercial computer animation, three-dimensional computer rendering, visual analysis and simulation, video production and interactive CD-ROM development.

## PROJECT EXPERIENCE

- ***Project Hydrologist, Western Energy, Billings, MT —*** Mr. Martin was the consulting project hydrologist for the Colstrip coal mine project. Mr. Martin prepared the Hydrology portions of permit applications for mine expansion, directed all surface water monitoring programs, completed mine drainage plans for operational phases of the mine and for proposed expansion areas.

- ***Project Hydrologist, Idaho Gold Corporation, Elk City, ID —*** Mr. Martin adapted U.S. Forest service sedimentation models for use on desktop computer systems, performed sediment modeling, and developed site-specific water balance models for two proposed gold heap leach mine projects.

- ***Project Hydrologist, Montana Tunnels, Jefferson City, MT —*** Mr. Martin adapted U.S. Army Corps of Engineers' landfill model (HELP) to a tailings and waste rock reclamation project for a large open pit mine. During this 5-year investigation, neutron probes were installed in tailings and waste rock reclamation test plots. Field data were used to calibrate and modify the original model so it could be used to model reclamation test plots and ultimately the final project reclamation designs.

- ***Consulting Hydrologist, Idaho National Engineering Laboratory, Idaho Falls, ID —*** Mr. Martin developed an erosion model for the purposes of evaluating engineering remediation alternatives for a radioactive waste management complex. The modeling effort including developing the model and calibrating it using past and existing levels of sediment monitoring data. In addition, Mr. Martin was responsible for evaluating the existing surface water and sediment monitoring plan for the site and making recommendations for the improvement of existing monitoring networks.

- ***Project Hydrologist, State of Montana, Rock Creek EIS —*** Mr. Martin authored the hydrology sections on description of alternatives, baseline conditions, and environmental consequences for an EIS written for a silver mine in Western Montana. Mr. Martin is also responsible for database validation and manipulation, alternative design review, and developing responses to comments from the Public Comment process.

- ***Project Hydrologist, State of Michigan —*** Mr. Martin reviewed past runoff and mine drainage calculations performed by other consultants for a mine in eastern Michigan. Using statistical procedures Mr. Martin generated new runoff estimates on the ungaged watersheds, including minimum, mean, and maximum expected flows, annual average flow, and 7-day, 10-year low flows.

- ***Project Hydrologist, U. S. Navy, Point Mugu Naval Air Weapons Station –*** Mr. Martin is currently project hydrologist responsible for storm water discharge and water quality monitoring, and adherence to California water quality guidelines at a U.S. Navy base and its associated outlying landing field on a remote island off the coast of California. Responsibilities include defining drainage basin runoff characteristics, runoff estimation, water quality monitoring program design, design of in-stream runoff control structures, implementation of automated monitoring stations, custom design of programmable

hardware for the insurance of automated sampling during storm water program required events, and review of existing Best Management Practices (BMPs) and recommendation of new BMPs to be implemented based on historical storm water runoff data.

- ***Project Hydrologist, U. S. Navy, Naval Base Ventura County Point Mugu California, Watershed Monitoring and Sampling for Calleguas Creek and Revolon Slough,—*** For eight years, Mr. Martin has been the technical lead for automatic water quality monitoring in the 303 (d) listed Calleguas Creek and Revolon Slough in southern California. Mr. Martin is also the technical lead and project designer for a watershed conceptual model project which included equipment design, installation, maintenance and operation of water quality equipment including an YSI multi-parameter sonde that collects water quality parameters including turbidity and a Sontek Argonaut acoustic doppler that collects continuous velocity, compass, tilt, temperature and pressure data. Information collected allows for continuous record of turbidity to act as a suspended sediment surrogate for sediment load and chemical flux estimates from upstream sources into the Mugu Lagoon. A custom database was developed that assists in performing instantaneous stream flow and suspended sediment concentrations for the creek. This data is used in conjunction with chemical data that is collected within the creek to establish concentrations of chemicals in Calleguas Creek in support of watershed planning for the 303 (d) listing and to identify source areas of contaminants in the watershed. An additional aspect of the study included collection of available upstream chemical and water quality data to identify potential inputs coming from the upper watershed. Reference sites were established throughout the lower watershed at the federal facility to correlate groundwater to surface water transport of chemicals of concern. This study included development of a groundwater flow model and fate and transport model to better understand groundwater movement under the facility, affects from seawater intrusion, and to forecast potential movement and concentrations of chemicals into the creeks and adjacent lagoon over time. The model outputs assisted in assessing future impacts to ecological habitat in the connected lagoon.

- ***Project Hydrologist, State of Montana —*** Mr. Martin is currently project hydrologist for the Abandoned Mine Reclamation contract. As part of this contract, which currently includes four separate mine locations, Mr. Martin designs storm water control features, temporary runoff diversion plans, and permanent stream channel relocation designs as required for Montana under the Montana Storm Water Pollution Prevention for Construction Activities regulations.

- ***Statistician, U.S. Navy, Fleet and Industrial Supply Center, Oakland, California —*** Mr. Martin was responsible for developing a streamlined procedure for screening of metals as chemical of potential concern (COPC) for human health and ecological risk assessment. Working with the California Department of Toxic Substance Control guidance and procedure documents, developed and modified approach to the determination of ambient metal concentrations in groundwater and soils and the determination of COPCs.

- ***Statistician, U.S. Navy, Naval Air Station, Point Mugu, California —*** Mr. Martin is responsible for performing statistical screening of chemicals of potential concern (COPC) for human health and ecological risk assessment. Mr. Martin works with the California Department of Toxic Substance Control, U. S. Environmental Protection Agency, and U. S. Navy guidance and procedure documents in the determination of COPCs prior to human Health and Ecological Risk Assessment.

- ***Animator, U.S. Environmental Protection Agency —*** Mr. Martin has completed technical, computer generated animations for the EPA Superfund Innovative Technology Evaluation program since 1991. Project equipment and components were three-dimensionally, computer modeled, and animations were produced for inclusion in summary videotape deliverables as enumeration on the specific functions and processes of the groundwater or soil remediation process.

- ***Interactive CD Development, U.S. Environmental Protection Agency —*** Mr. Martin has developed numerous technical and interactive multimedia presentations for the EPA. Projects include companions to written documents or stand-alone presentations and are presented on CD-ROM. Completed projects contain a wide variety of text, forms, guidelines, photographs, movies and animations.

# DON M. MAY

*Environmental Scientist*

## EDUCATION

BA, Geography, University of Montana, 1992
AS, Electrical Technology, Northern Montana College, 1982

## REGISTRATIONS/CERTIFICATIONS

Asbestos Inspector: Montana (MTA1218, 1995)
Underground Storage Tank Remover: Montana (R-0806-146, 1994)
Monitoring Well Constructor: Montana (MWC-327, 1993)

## EXPERIENCE SUMMARY

Mr. May has over 16 years of professional experience in environmental project management, remedial investigations, hydrological baseline studies, cumulative effect analysis, remediation system design, emergency spill response, and construction supervision. He was the lead control inspector for several remediation construction projects with budgets totaling more than $1M and principal investigator for numerous Phase I and II environmental site assessments (ESAs) in western Montana. He has been the principal field investigator on hazardous waste projects in western Montana, including Rocky Mountain Laboratories in Hamilton and is the senior field scientist responsible for petroleum hydrocarbon release remediation in western Montana. His construction oversight supervision capabilities are enhanced by 20 years of experience in the construction industry.

## PROJECT EXPERIENCE

*Abandoned Mine Reclamation*

- ***Site Investigation and Stream Reconnaissance, Blue Joe Creek, Idaho Panhandle National Forests, Idaho***. Senior Field Scientist and member of development team charged with designing and implementing a project sampling and analysis plan/quality assurance project plan (SAP/QAPP). Organized field investigation and stream reconnaissance mapping mine waste and collecting samples for laboratory analysis. (2003)

- ***Site Investigation and Stream Reconnaissance, Bear Gulch and Gold Creek, Idaho Panhandle National Forests, Idaho***. As Senior Field Scientist, developed and implemented project SAP/QAPP. Organized field investigation and stream reconnaissance mapping mine waste and collecting samples for laboratory analysis. (2002)

- ***Surface Water Study for Proposed Mine, Libby, Montana***. Project Scientist responsible for managing the surface water portion of a hydrologic baseline study for a major mine proposed in an environmentally sensitive area next to a wilderness area. Collected surface water quality samples and flow gauging data. (1995 to present)

- ***Sherlock Creek Placer Mine Restoration Plan, Shoshone County, Idaho***. Senior Field Scientist responsible for restoration fieldwork after a placer mining operation on USFS land resulted in a displaced stream channel, abandoned machinery and 20 acres of disturbance. On-site investigation included an inventory of site conditions, classification of the existing stream and a reference stream, and collection of flow gauging data and surface water quality samples. (2004)

*Water Resource Investigation / Development*

- ***Hydrogeologic Characterization for Municipal Water Supply, Central Montana***. As Senior Field Scientist, completed a series of 24-hour pumping tests to characterize hydrogeologic conditions to support design and development of a municipal water supply. (1995)

- ***Hydrogeologic Characterization for Highway Dewatering Project, Idaho***. As Senior Field Scientist, conducted slug tests and 24-hour pumping tests to characterize aquifer parameters and water quality. (1991)

- ***Hydrogeologic Characterization for Proposed Mine, Montana***. As Senior Field Scientist, conducted 72-hour pumping tests to characterize hydrogeologic conditions to support design of mining complex.

*Brownfields*

- ***Champion Sawmill Site Brownfields, Missoula, Montana***. As Senior Field Scientist, completed a comprehensive environmental site assessment of the Missoula Sawmill Site to further quantify soil and groundwater contamination from previous investigations and to inspect the site for the presence of asbestos-containing materials and lead-based paint. Results from the site assessment and previous project data were compared to applicable risk-based cleanup standards for various land use scenarios. (2003 to 2004)

- ***Great Falls Brownfields Riverfront Redevelopment Project, Great Falls, Montana***. As Senior Field Scientist, completed a comprehensive environmental site assessment of the Missoula Sawmill Site to further quantify soil and groundwater contamination from previous investigations and to inspect the site for the presence of asbestos-containing materials and lead-based paint. Results from the site assessment and previous project data were compared to applicable risk-based cleanup standards for various land use scenarios. (2003 to 2004)

*Mine Permitting*

- ***Baseline Hydrological Study for Gold Mine, Western Montana***. Senior Field Scientist responsible for design and installation of monitoring equipment for baseline hydrological study for a proposed gold mine. (1995 to 2000)

- ***Environmental Baseline Data Collection and Hydraulic Analyses, Western Montana***. Senior Field Scientist responsible for environmental baseline data collection and hydraulic analyses for various proposed or existing metal mines. Activities included stream gauging, surface and groundwater sampling, physical characterization of area streams, and spring and seep surveys. (1995 to present)

- ***Mine Site Field Investigations, Montana***. As Senior Field Scientist, conducted field investigations for a cyanide leach pad at a large open pit gold mine in central Montana. Required double ring infiltrometer tests and collection of leachate water samples using suction lysimeters. Also conducted in situ metals and nitrate attenuation studies at several mines in central and western Montana. (1994)

*Landfill Investigations / Engineering*

- ***Groundwater Sampling at Municipal Landfills, Western Montana***. As Senior Field Scientist, conduct groundwater sampling from monitoring networks at municipal sanitary landfills. Analyze and interpret data and prepare technical reports. (1991 to present)

- ***Hydrogeologic Characterization at Former Landfill, Montana***. As Senior Field Scientist, completed series of 24-hour pumping tests at a former landfill to characterize hydrogeologic conditions to support design of a groundwater remediation system. (1995)

*Environmental Site Assessments*

- ***Pesticide-impacted Soil Investigation at Livestock Treatment Tank, Ennis, Montana***. Principal Abatement Coordinator responsible for completion of a field investigation of pesticide-impacted soil in a former livestock treatment tank to develop and implement remedial techniques to abate impacted soil. Coordinated field investigation with site manager and drilling subcontractor, obtained soil samples and conducted field analyses for pesticides toxaphene and lindane using a portable field test kit. Conducted fieldwork in personal protective equipment Level C, which required donning an air-purifying respirator and protective clothing. Coordinated abatement activities with site manager, disposal site manager and contractor. Provided field supervision during abatement and site reclamation. (2000)

- ***Phase II ESA, Northwest Peterbilt, Missoula, Montana***. Senior Field Scientist responsible for performing a Phase II ESA at a 2.9-acre site on US Highway 93, approximately 9 miles northwest of Missoula. The facility had operated as a semi-truck sales and repair shop since approximately 1965. Removed potentially contaminated soil associated with five injection wells. Located and removed buried injection wells through a ground-penetrating radar and an electromagnetic survey. Provided oversight and quality assurance monitoring during the remedial action. (2005)

# NATALIE J. MORROW, LG, LHG

*Hydrogeologist*

## EDUCATION

MS, Hydrogeology, University of Montana, 2002
BA, Environmental Geology, University of Montana, 1995

## REGISTRATIONS/CERTIFICATIONS

Licensed Geologist: Washington (#230, 2001)
Licensed Hydrogeologist: Washington (#230, 2001)

## EXPERIENCE SUMMARY

Ms. Morrow has over 13 years of diverse experience in regulatory compliance; designing and performing hydrogeological assessments, environmental investigations, and has performed remediation planning and remediation oversight for soil, waste, groundwater and surface water in the western United States. She is a project manager for Tetra Tech's brownfield program and also provides brownfield grant writing assistance. Ms. Morrow has prepared many environmental characterization and remedial investigation and remedial action work plans and reports and quality assurance project plans. She has also developed and evaluated remedial alternatives, prepared voluntary cleanup plans, and has performed quality assurance/quality control evaluation and validation using Contract Laboratory Program guidelines. Representative project experience includes work on brownfields sites; CERCLA and RCRA sites involving mine wastes, sediment and residential yard remediation; abandoned mines; primary metals and other industrial facilities; sawmills; railroad sites; and a variety of petroleum release sites.

## PROJECT EXPERIENCE

- ***Site Investigation, Atlantic Pacific Milling, Beaverhead–Deerlodge National Forest, Pony, Montana.*** Assistant Project Manager responsible for a co-designing approach and implementing site investigation at the former milling site to collect data to evaluate the nature, extent, and magnitude of tailings at the site and provide data for possible use in an engineering evaluation and cost assessment (EE/CA). Work included site reconnaissance and sampling of tailings, sediment and surface water. Wrote the site investigation report. (2003 to 2004)

- ***Site Investigation, Catlin Engineering Facility, Missoula, Montana***. Assistant Project Manager. responsible for designing, implementing, and supervising the site investigation to evaluate soil affected by historical uses at the site, which including dust abatement with petroleum hydrocarbons, petroleum hydrocarbons in vehicle-storage area, use and storage of pesticides and herbicides, and possible burial of equipment. Prepared a site investigation report identifying two primary areas containing petroleum hydrocarbons from dust abatement and vehicle storage. (2003)

- ***Site Investigation, Frohner Meadows Complex, Helena National Forest, Clancy, Montana.*** Assistant Project Manager responsible for co-designing the investigation approach and implementing site investigation at the Upper and Frohner Meadows. Goal of the investigation was to further evaluate effects of tailings from the Frohner Mill and Nellie Grant Mine on soil, sediment, surface water and groundwater and provide data for use in an EE/CA. Work included site reconnaissance and sampling of tailings, sediment, surface water and groundwater. Wrote the site investigation report and EE/CA. (2003 to 2004)

- ***Sediment and Surface-Water Investigation, Milltown Reservoir, Milltown, Montana.*** As Hydrogeologist, collected sediment and surface-water samples at the reservoir and along the Blackfoot and Clark Fork Rivers to evaluate metal concentrations. Collecting sediment and surface-water samples required specialized water- and sediment-sampling equipment, including a KB corer for surficial sediment samples, a PVC coring device for deeper sediment samples and a beta bottle for depth-integrated surface-water samples. Collected sediment and surface-water samples in up to 20 feet of water. Collected surface-water samples using a D-49 sediment sampler at US Geological Survey sampling locations upstream and downstream of the reservoir and on the Blackfoot River. (1999)

- ***Remedial Investigation, Butte Priority Soils Operable Unit, Butte, Montana***. As Hydrogeologist, conducted soil and groundwater remedial investigations for the potentially responsible parties at the Butte Priority Soils Operable Unit of the Silver Bow Creek Butte Area Superfund Site. Helped select sites of monitoring wells and supervised installation of alluvial and weathered bedrock groundwater monitoring

wells using hollow-stem auger and air rotary drilling methods. Created potentiometric surface maps from historical and current water-level data. Created concentration contour maps using historical and current chemical data. Organized, coordinated and participated in monthly and quarterly groundwater monitoring of up to 38 monitoring wells and monitored and maintained continuous-water-level recorders for nine monitoring wells. Performed inorganic data validation of all groundwater analytical data according to EPA Contract Laboratory Program guidelines. (1996 to 2000)

- ***Groundwater Remediation, Eastern Michaud Flats Superfund Site, Pocatello, Idaho.*** Hydrogeologist. Supervised and performed work to help design a groundwater remediation system for arsenic- and sulfate-contaminated groundwater. Supervised extraction-well inspection and maintenance and completion of continuous cores using the rotosonic drilling method. Used data to design groundwater extraction wells. Cores to support extraction-well design were drilled up to 215 feet below ground. (2003)

- ***Wetland Treatment System, Mike Horse Mine, Upper Blackfoot Mining Complex, Montana.*** As Hydrogeologist, assisted with a tracer test using sodium chloride to evaluate hydraulic properties and residence time of two subsurface flow cells in a wetland treatment system to reduce metal concentrations. Reviewed calculations made using the data collected for the hydraulic properties and residence times of the cells. (1999)

- ***Surface-Water Monitoring, Clark Fork River, Western Montana***. As Hydrogeologist, conducted three high-water surface-water sampling events during spring runoff at two locations on the Clark Fork River to evaluate metal concentrations. Collected samples according to EPA Method 1669 Clean Hands/Dirty Hands sampling technique and using a bridge crane, D-49 sampler and churn splitter to collect samples for portions of the sampling. (1999)

- ***Surface Water and Groundwater Investigation, Iron Mountain Mine, Superior, Montana.*** As Hydrogeologist, installed and leveled a flume at a flowing adit, measured discharge and collected surface water samples from the mine adit, mill site and two nearby creeks. Helped develop and carried out a sampling plan to install and sample a groundwater-monitoring well and collect soil and tailings samples.

- ***Phase I and II ESAs, Montana, Idaho and Washington***. As Hydrogeologist, conduct Phase I and II ESAs in accordance with ASTM standards. Develop work plans and prepare investigation reports for Phase II ESAs. Clients include institutional lenders and large and small corporations. Sites include industrial and commercial facilities and undeveloped properties. (1996 to present)

- ***Mine Tailings Dam Breech Site Remediation, Atlanta, Idaho***. As Hydrogeologist, performed an inorganic data evaluation on approximately 35 groundwater, surface water, tailings and soil data packages for data collected by others during 1997-98. Prepared a data-evaluation report. Evaluated and validated over 55 sample delivery groups with enforcement-quality data following Contract Laboratory Program guidelines for groundwater, surface water, soil, tailings and biota. Helped write a quality assurance–quality control review report. Composed a sampling plan to evaluate nutrient and metal concentrations in borrow material for cover on a tailings pile. (2000 to 2001)

- ***Highway 93 Landfill Wetland Mitigation, Missoula, Montana***. As Hydrogeologist, prepared a wetland mitigation work plan in accordance with US Army Corp of Engineers permit requirements to construct a 2.8 acre wetland area to replace wetlands previously filled at the site. Performed test-pit excavations to delineate the extent of the Class III Landfill and other fill areas. Prepared a report and figures describing test-pit findings. (2003)

- ***Union Pacific Railroad Wetland Project, Portland, Oregon***. As Hydrogeologist, performed remedial construction oversight and verification sampling during removal of PCB-contaminated soil and prepared remediation report. Performed soil-stockpile sampling to characterize waste for disposal of soil containing petroleum hydrocarbons. (2001)

- ***Superior School District, Superior Petroleum Release Site, Superior, Montana***. Project Manager responsible for the design of a remedial investigation and oversaw the design of a biovent remediation system for two petroleum releases at the site. Activities have included installation of several new monitoring wells, co-authoring the bio-vent corrective action plan and reviewing the design of two biovent remediation systems, and associated reporting. Biovent systems will likely be installed in the spring of 2007 upon MDEQ approval. (2005 to present)

# DANIEL E. PASTOR, PE

*Senior Environmental Engineer*

## EDUCATION

MS, Environmental Engineering, University of Illinois at Urbana-Champaign, 1993
BS, with honors, Civil Engineering, The University of Texas at Austin, 1989

## REGISTRATIONS/CERTIFICATIONS

Professional Engineer: Idaho (#10568, 2002), Missouri (#1999137712, 1999), Illinois (#062-052641, 1998), Colorado (#30599, 1995)

## EXPERIENCE SUMMARY

Mr. Pastor has 13 years of experience in environmental consulting, specializing in brownfields/voluntary cleanup site project management. He is also experienced at providing treatment process design, soil and groundwater remediation, feasibility studies, and cost evaluation.

## PROJECT EXPERIENCE

*Mining/Metals*

- ***Asarco, Circle Smelting Corporation Site, Beckemeyer, Illinois***. Project Manager and Engineer of Record for a $7.0 million EPA-mandated removal action and concurrent Brownfields redevelopment project. Project scope included: removal of lead-impacted soils from 370 residential, commercial and public properties; redevelopment of a 28 acre former smelter facility with decontamination and renovation or demolition of twenty buildings, removal of lead-impacted surface materials and construction of concrete and gravel barriers; and consolidation of the removed materials in a 150,000 cubic yard engineered repository.

- ***Confidential Client, Private Shooting Range Site, North Central, Colorado***. Project Manager and Design Engineer for $800,000 clean-up of a closed shooting range under the Colorado Department of Public Health and Environment (CDPHE)'s Voluntary Clean-up and Redevelopment Act (VCRA) program. Project scope included: excavation, phosphate and cement-based stabilization, and off-site disposal of 1,300 cubic yards of backstop soil containing concentrated lead shot and slugs and excavation and off-site disposal of 30,000 cubic yards of lead-impacted, non-hazardous soil.

- ***Hecla Mining Company, Republic Mine, Republic Washington***. Technical Lead responsible for evaluating treatment and disposal options for sulfate and metals-impacted mine water. Assessment included identifying water quality criteria for various post-treatment disposal options including discharge to surface water, infiltration to subsurface soils and groundwater or routing to a local POTW. Currently developing the conceptual design and bench testing of a 100 gpm subsurface flow wetland treatment and infiltration system.

- ***Alcoa, Aluminum Foil Rolling Mill, Ft. Lupton, Colorado***. Project Manager responsible for removal of potentially explosive beryllium-containing dust from building superstructure and process equipment over a 39,000 square feet area and removal and off-site disposal of 4,000 cubic yards of buried non-hazardous refractory brick waste.

- ***Asarco, Murray Smelter Site, Murray, Utah***. Provide remedial design support for a 125 acre former smelter site Brownfields project in northern Utah. Prepared cost estimates for various remedial alternatives and assisted in the development of remedial design plans for the site, including detailed design drawings and technical specifications associated with excavation of approximately 80,000 cy of debris contaminated with lead and arsenic.

- ***Asarco, Gem Portal Site, Gem, Idaho***. Prepared an Engineering Evaluation/Cost Analysis (EE/CA) with detailed cost evaluations of alternatives to treat flows of up to approximately 200 gpm of metal enriched, acidic discharge from an abandoned mine in northern Idaho. Remedial costs evaluated ranged from $4.1 to 16.7 million.

- ***Asarco, Upper Blackfoot Mining Complex, Lincoln, Montana***. Conducted system start-up and optimization testing of an aeration/precipitation system for oxidation and removal of dissolved metals from low pH mine drainage with variable flow rates up to 100 gpm. Evaluated oxidation and precipitation kinetics and settling rates of generated metal-concentrated sludge under ambient conditions.

- ***FirstMiss Gold, Inc., Getchell Mine, Winnemucca, Nevada***. Evaluated treatment options for reducing sulfate and arsenic concentrations in water generated by mine dewatering operations for a design flow rate of 1,000 gpm. Provided technical reviews and evaluated costs for reverse osmosis, ion exchange, and biological treatment systems.

- ***Asarco, Bunker Hill Mine Superfund Site, Kellogg, Idaho***. Instrumented and conducted saline tracer tests to evaluate hydraulic flows through submerged packed bed wetland treatment cells at an acidic mine drainage site. Evaluated the mixing patterns and flow paths within the treatment cells and their potential effects on biological reaction time and metals removal.

- ***Union Pacific Railroad, Torrington Hide and Metal and Smith Residence Superfund Site, Torrington, Wyoming***. Supervised remedial operations which included cement-based stabilization of 6,600 cubic yards of lead-contaminated soils and debris, characterization and disposal of 30 drums of RCRA and TSCA regulated wastes, and reclamation of impacted areas.

*Volatile Organic Compounds (VOCs)*

- ***Microsemi Corporation, Broomfield, Colorado***. Investigated the extent of contamination and evaluated remedial alternatives for an industrial facility with DNAPL impacts to a depth of 80 feet and a groundwater plume over approximately 19 acres. Provided technical assistance during meetings with the State regulatory agency and settlement negotiations with former facility owners. Provided testimony in hearings related to the cost associated with remediation of the Site.

- ***Alcoa, Aluminum Foil Rolling Mill, St. Louis, Missouri***. Project Manager and Design Engineer responsible for: design, installation and operation of a 14 well air sparging system to stimulate in-situ biodegradation of a food grade oil product and preliminary design of a “hanging” slurry wall/oil skimmer system to collect and recover oil floating on the water table.

- ***Microsemi Corporation, Broomfield, Colorado***. Prepared a conceptual design for the renovation and expansion of an existing process water neutralization system at a semiconductor manufacturing facility. The conceptual design included reconfiguring existing process equipment and addition of new equipment to increase system capacity and improve performance. Assisted client during negotiations with regulatory agency.

*Pesticide/Herbicides*

- ***Simplot Soil Builders, Fertilizer Coating Operations Plant, Missouri*** – Project Manager for decontamination of processing areas and equipment used to coat granular fertilizer with herbicide compounds. Responsible for managing cleaning operations, clearance sampling and analysis activities, and identifying liquid and solid waste disposal procedures.

- ***Simplot Soil Builders, Fertilizer/Pesticide Distribution Center, Colorado***. Project Manager for a focused Phase II investigation and risk-based assessment of soil clean-up requirements for residual agri-chemicals in soils.

*Petroleum Hydrocarbons*

- ***Texas Water Commission, Various Sites***. Remedial investigation manager for sites under the Texas Water Commission Petroleum Storage Tank Remediation Fund. Designed and executed soil, groundwater, and soil vapor contamination studies including drilling, well installation, and soil probe activities. Reviewed analytical data, evaluated treatment technologies, and recommended remediation methods.

- ***Confidential Client, Swanson River Field Oil and Gas Development Site, Soldotna, Alaska***. Investigated the extent of surface and subsurface polychlorinated biphenyl (PCB) and hydrocarbon contamination at the Swanson River Field Oil and Gas Development Site in Alaska.

# STACY PEASE

*Biologist / Natural Resource Planner*

## EDUCATION

MS, Watershed Management, University of Arizona, 2000
BS, Wildlife and Fisheries Science, University of Arizona, 1998

## EXPERIENCE SUMMARY

Ms. Pease has 10 years of experience working with state and federal agencies, academic institutions, and the private sector on projects involving plant and wildlife ecology; natural resource management, planning, and permitting; terrestrial ecology; and terrestrial biology. Ms. Pease has served as the Assistant Project Manager, Lead Writer, and Environmental Specialist on projects throughout the Rocky Mountain and desert Southwest regions involving wind energy, transmission lines, mining, and timber. Tasks at Tetra Tech include preparation of biological assessments (BAs), resource management plans (RMPs), environmental impact statements (EISs), wildlife assessments, wetland delineations, and National Environmental Policy Act (NEPA) assessments, and integrated natural resource management.

## PROJECT EXPERIENCE

*Wildlife Studies / Management*

- ***Bureau of Land Management (BLM) RMP Revision, Butte, Montana.*** Staff Biologist responsible for assessing and describing the current status of wildlife, sensitive, threatened and endangered species within the Butte resource management area and writing a description of the current management situation. Assisted with development of management alternatives to be presented in the updated RMP. (2003 to 2005)

- ***Grant Creek Stream Restoration Project BA, Missoula, Montana.*** Biologist responsible for conducting field surveys for fish and wetlands. Wrote the BA for listed species for the project EA. (2004 to 2005)

- ***Sage Grouse Habitat Improvement Study, Wyoming.*** As Field Scientist, assisted in the study and sample design, collected field data and performed statistical analysis of data (descriptive statistics, ANOVA, Tukey-Kramer) on a series of study plots that were mechanically treated to improve sage grouse habitat. (2003)

- ***Administration of Wildlife Habitat Incentives Program (WHIP), Weston County, Wyoming.*** Program Administrator contracted by NRCS to administer WHIP in the Weston County area. Designed and implemented habitat improvement projects, wrote WHIP contracts and helped landowners complete the contract process. (2002)

- ***Operation of Habitat Extension Program, Northeastern Wyoming***. Biologist responsible for initiating, operating, and promoting WGFD's Habitat Extension Program. The work required extensive knowledge of natural resource management practices, knowledge of wildlife habitat requirements, ability to work with private landowners and agency personnel, skills in ArcViewOscarications and proficiency in grant and contract writing. Provided technical assistance to private landowners in planning and implementation of wildlife habitat improvement projects. This included wetland pond design, riparian restoration, food plot design, grazing system design and grant writing. Conducted scheduling, data collection, data analysis and on-the-ground implementation of habitat improvement projects. Promoted the Habitat Extension Program by informing the public of the importance of wildlife habitat improvement through organizing workshops and writing articles for newsletters and newspapers. Assisted fellow biologists in annual sage grouse counts, white-tail deer surveys and hunter check stations. (2002)

*Watershed Studies*

- ***Water Quality Monitoring, Weston County, Wyoming.*** As an Independent Contract Biologist, worked with the Weston County Natural Resource District and Weston County agencies to assess water quality in relation to private landowner practices. Collected water samples for analysis, assessed the condition of the riparian area, and described the fluvial morphology of the sample site and the condition of the streambed. (2002)

- ***General Aquatic Wildlife Survey, Arizona.*** As a Field Technician for the Arizona Game and Fish Department, collected field measurements and determined riparian health utilizing the General Aquatic Wildlife Survey method. Obtained fish population density estimates by electro-shocking streams. Surveyed the public for recreational uses and creel counts for the purpose of estimating angler pressure. (1997)

*NEPA Process and Documentation (EIS and EA)*

- ***Caldbeck Environmental Assessment (EA), Bureau of Indian Affairs, Flathead Indian Reservation, Montana.*** Assistant Project Manager/Lead Writer for project involving development of a subdivision on Salish and Kootenai Tribal land. Assessed current environmental conditions within the project area and potential impacts of the proposed project, prepared the EA, and facilitated the NEPA process. (2006)

- ***Dry Fork EIS, USFS, Paonia, Colorado.*** Environmental Scientist contributing to preparation of the Dry Fork EIS. The EIS focused on the effects of underground coal mine subsidence on surface resources and identified mitigation measures. Served as member of an interdisciplinary team of resource specialists. Assessed and described the current condition of wildlife within the project area, analyzed impacts of the proposed alternatives, and wrote the wildlife section of the EIS, BA, and biological evaluation (BE). (2004 to 2005)

- ***Biological and Wetland Assessments, Montana***. Assistant Project Manager/Lead Investigator assisting with BAs for the runway expansion project at the Missoula Airport and Grant Creek Restoration Project. Assisted with wetland delineations and assessments for the runway expansion project at the Missoula International Airport, Rocky Boy Pipeline Project, and Grant Creek Restoration Project. (2004 to 2005)

- ***Replacement Building EA, National Institutes of Health (NIH), Hamilton, Montana.*** Assistant Project Manager/Lead Writer/Environmental Scientist tasked with assessing current environmental conditions on the Rocky Mountain Laboratories campus, analyzing potential impacts of demolition and reconstruction of several buildings, and preparing the EA. (2005 to 2006)

- ***Helena Weed Treatment EIS, USFS, Helena, Montana***. Environmental Scientist assisting with preparation of the wildlife section of a BA, BE, and EIS that analyzed potential impacts resulting from use of herbicides and other weed control methods to control and/or eradicate noxious weeds on a forest-wide basis in the Helena National Forest. The BA and BE assessed and analyzed impacts of the proposed action to threatened and endangered species and sensitive species, respectively. The EIS assessed alternative integrated weed control plans to determine impacts on water resources, human health, wildlife, fish, and other ecological resources. (2003)

- ***Bio-Safety Level 4 EIS, NIH, Hamilton, Montana.*** Environmental Scientist tasked with analyzing environmental resource issues for the Rocky Mountain Laboratories Integrated Research Facility EIS. Addressed public comments. (2002 to 2003)

- ***Wrenco Loop EA, USFS, Sandpoint, Idaho.*** Environmental Scientist responsible for assessing the current condition of wildlife within the project area, analyzing impacts of the proposed timber sale, and writing the wildlife section of the Wrenco EA. (2004)

*Wind Energy*

- ***Burleigh County Wind Energy Project EA, North Dakota.*** Assistant Project Manager/National Environmental Policy Act Specialist responsible for analyzing impacts of the wind energy project (i.e., wind turbines, a collector substation, transmission lines, and roads) on natural resources within the project area. (2005)

- ***Site Permit Application, High Prairie Wind Farm, Minnesota.*** Biologist responsible for analyzing impacts of a large wind energy conversion system (i.e., wind turbines, a transmission line, collector substation, and roads) on wildlife species within the project area, including threatened and endangered species, resident and migratory birds, and game species. (2005)

# WALTER VERING

*Project Biologist*

## EDUCATION

MS, Natural Resources (Wetlands), University of Wisconsin-Stevens Point, 1993
BA, Biology, Wartburg College, 1988

## EXPERIENCE SUMMARY

Mr. Vering has over 14 years of experience in biology and environmental consulting involving wildlife and vegetation baseline studies, design and construction of wetland mitigation projects, restoration of impacted wetlands and delineation of jurisdictional wetlands. He is also familiar with Section 404 permitting procedures, geographic information system (GIS) applications, aerial photograph interpretation, and preparation of technical reports, including National Environmental Policy Act (NEPA) documents. Activities include project management-related duties for natural resource/biology projects, natural resource marketing, proposal preparation, providing field support services for natural resource investigations and technical report preparation.

## PROJECT EXPERIENCE

*Fisheries Studies / Management*

- ***Yanacocha Mine Biomonitoring Plan, Northern Peru***. As Project Manager, supervised preparation of a biomonitoring plan detailing a long-term study for key biological constituents such as fish, macroinvertebrates, and amphibians in the northern Peruvian Andes. Assisted in identifying abiotic factors that should also be tracked, including accumulation of metals in fish and macroinvertebrates, hydrologic features, sediment, and quality of water resources. Prescribed intensity and location of sampling activities based on past studies. Created standard operating procedures for collection of biotic and abiotic data. Collected fisheries, macroinvertebrate, fish tissue samples, hydrolgic data (including flow and assessment of hydrologic features), and water quality samples following the protocols and procedures specified in the biomonitoring plan. (2005)

- ***Aquatic Ecological Risk Assessment for Gold Mine, Cajamarca, Peru***. Project Manager responsible for aquatic ecological risk assessment fieldwork at the world's largest gold mine, located in the Peruvian Andes. Responsible for in-country and stateside logistical support to handle equipment, supplies, transportation, and sample handling and shipping from this remote third world location. Supervised two five-person crews for 22 days during collection of information on surface water quality and quantity, sediments, macroinvertebrates, periphyton, fish, and riparian and in-stream habitat at nearly 50 sites. Fieldwork involved extensive hiking at elevations greater than 12,000 feet at remote locations. The project required interfacing with the local community and being evaluated via third-party oversight by the international environmental community. Supervised collection of hundreds of samples (water, tissue, sediment, fish, macroinvertebrates) to be analyzed in Peru and the United States. Prepared fisheries, macroinvertebrate, and habitat sections of the aquatic ecological risk assessment. Completed fieldwork on time and within budget. (2004)

- ***Baseline Fisheries Data Collection for Mine Expansions, Southeastern Idaho***. As Project Biologist, assisted with collection of baseline fisheries data for J.R. Simplot's Smoky Canyon Mine and Deer and Manning Creek lease areas and Agrium's North Rasmussen Ridge Phosphate Mine expansions. Fieldwork required backpack electrofishing streams to identify species present, collection of specimens for heavy metal tissue analyses, habitat typing of selected electrofishing reaches, collection of macroinvertebrate samples and coordination with the client, analytical laboratory and subcontractors. (2003)

- ***Baseline Fisheries Data for Proposed Petroleum Pipeline, Western Montana.*** Multi-disciplinary Team Member assisting with collection of baseline fisheries data for Yellowstone Pipe Line Company's proposed petroleum pipeline. Fieldwork included electroshocking fish in over 30 streams and a quantitative analysis of a small lake using night electrofishing, beach seining and gill netting methods. Streams identified as bull trout habitat required snorkeling survey methodologies. Supervised field crews during extensive classification of habitat where the proposed pipeline crossed streams. (1997)

- ***Alpine Lake Survey, Madison and Gallatin Rivers, Montana.*** Field Biologist for an extensive alpine lake survey in the Tobacco Root Mountains for potential fisheries to help reduce angling pressure in the rivers. (1987)

- ***Fisheries Studies for Hydropower Project, Southwestern Idaho.*** Project Manager for a team of biologists assisting a client to meet federal, state and local agency requirements for a low-head hydropower project. Act as liaison between client and US Army Corps of Engineers, US Fish and Wildlife Service, Environmental Protection Agency, Federal Energy Regulatory Commission, Idaho Department of Fish and Game, and Idaho Department of Environmental Quality. Conduct biannual fisheries monitoring, including mark-recapture in the Payette River and depletion surveys in several of its tributaries. Responsible for securing collection permits, all aspects of fieldwork (including fabrication of an electrofishing raft to accommodate the shallow waters of the Payette River), supervision of field crew personnel, data validation, data reduction, and report preparation. (1998 to present)

- ***Salmonoid Species Management, Southwestern Montana***. Field Biologist assisting a regional fisheries manager on this Montana Department of Fish, Wildlife and Parks project. (1987)

*Wetlands Studies / Management*

- ***Wetland Mitigation Design, McCall, Idaho***. Project Manager responsible for designing wetland mitigation to satisfy Clean Water Act mitigation requirements associated with relocation of a stream channel. Mitigated wetland resulted in an increase in wetland acreage and functions and values. (2005 to 2006)

- ***Wetland Delineation and Functions and Values Assessments, Intermountain West, Northern Midwest and Great Plains.*** As Project Manager, supervised and/or conducted numerous wetland delineations and assessments across the Intermountain West, Midwest, and Great Plains. Conducted delineations and assessments in support of private land development, mining and forestry operations, public land exchanges, and non-profit land trusts. (2003 to 2006)

- ***Annual Monitoring, ASTARIS Mine Wetland Mitigation Sites, Southeast Idaho***. Project Manager responsible for supervising annual vegetation, hydrology, and soils monitoring at two wetland restoration and enhancement sites. Field surveys include stream elevation cross-sections, soil cores, vegetation plots, and visual stream hydrology monitoring. Review the data analysis and assist with preparation of annual monitoring reports. (2002 to present)

- ***Conceptual and Final Wetland Mitigation Plan, Big Timber, Montana***. Project Manager assisting a client to enhance, restore, and create wetlands on land adjacent to the Yellowstone River. Supervised collection of a significant amount of field data on this project, including surface and groundwater data and soil conditions. Completed a wetland delineation and conducted a functions and values assessment of existing wetlands at the site. Assisted the client in developing wetland reserves on this property with the intent to place the reserves under a conservation easement and distribute the reserves to MDT to compensate for wetland impacts elsewhere. Supervised baseline data collection, engineering design, environmental permit preparation, construction oversight, and agency liaison. (2002)

- ***Conceptual and Final Wetland Mitigation Plan for Horseshoe Bend Hydroelectric Company, Letha, Idaho.*** Project Manager responsible for a wetland delineation on a 144-acre site and a functions and values assessment of wetlands using the hydrogeomorphic approach. Details of the conceptual mitigation plan included preservation, restoration, enhancement, and creation of wetlands on the project site. Coordination between the client, agencies, field biologists, GIS analysts, computer-aided drafting personnel, and technical reviewers was critical to the successful completion of this project under very tight project deadlines. (2001)

- ***Wetland Mitigation Bank Permitting, North Platte, Nebraska***. As Project Manager, supervised the permitting process for this bank development for Flying J and the City of North Platte. Collected preliminary hydrological information and prepared detailed final design diagrams. Supervised construction and coordinated short- and long-term monitoring vegetation and wildlife requirements. This was the first successful private mitigation bank in the state of Nebraska. (1998)

# PATRICIA ANN WILLIAMS

*GIS / CAD Specialist*

## EDUCATION

MA, Geography (GIS/Cartography), University of Montana, 2006
BS, Wildlife Biology, University of Montana, 1995

## EXPERIENCE SUMMARY

Ms. Williams has over five years of experience with geographic information systems (GIS) using ArcGIS, ArcIMS, and AutoDesk and database management using Microsoft Access. She also has experience with MicroStation, Erdas Imagine, Idrisi Kilimanjaro, ArcExplorer, MacroMedia Dreamweaver, and SPSS Statistical Software and a variety of graphics, database, presentation, modeling, and word processing software. Ms. Williams produces drawings, diagrams, graphs, charts, maps, and technical schematics for projects involving federal and state agencies, utility companies, and private industry. She also serves as an information technology specialist. Ms. Williams also has experience in raptor netting and banding, passerine nest surveys, and woodpecker song analysis.

## PROJECT EXPERIENCE

*Geographic Information System Services*

- ***GIS Support for Bureau of Land Management Resource Management Plan, Arizona***. As GIS Analyst, assisted with production of maps and figures. (2005)

- ***GIS Support for Environmental Assessments (EAs) and Environmental Impact Statements (EISs), Montana***. As GIS Analyst, provide cartography and GIS analysis to support EAs and EISs for environmental projects, including:
    - Brownfields EA: Various Montana communities (2005)
    - Missoula Airport Authority EA: Missoula (2005)
    - Rocky Mountain Laboratories Replacement Building EA: Hamilton (2005)
    - Bonneville Power Administration EIS: Montana (2006)
    - Montana-Alberta Tie Line EIS: Montana (2006)

- ***Vegetation Cartographic Services, USDA-Forest Service (USFS) Region 1, Missoula, Montana.*** Cartographic Technician responsible for compiling and analyzing rare plant data using ArcGIS 9 and the Geodatabase Model. Assisted in the field with rare plant surveys and placement of targets for an aerial survey. Developed supervised and unsupervised forest/non-forest vegetation classification of LANDSAT ETMs from North American Land Cover data to define potential natural vegetation using Erdas Imagine. (2004)

- ***Fire Season Maps, USFS Region 1, Missoula, Montana***. As Cartographic Technician, created fire perimeter, perimeter change, ownership maps, and other fire-related products for use in documents, web sites, and public information. Supported Infrared image interpreters and solved printer / computer management problems during peak map production of the 2003 fire season using ArcGIS 8x. (2003)

- ***Montana Department of Natural Resources and Conservation Maps, Missoula, Montana.*** Cartographic Technician responsible for digitizing thematic maps for fire and aviation management wildland fire protection and producing general ownership maps for Montana counties for use in analysis of structural fire response using ArcView 3.2. Developed metadata for wildland fire protection maps using ArcGIS 8.1. (2002)

- ***Interactive Mapping Services, Snow Leopard Project, Central Asia***. Cartographic Technician responsible for building interactive mapping service and web site using ArcIMS 9.0 and Macromedia Dreamweaver to enable users to access, map, and query, the Snow Leopard Information and Management Systems database. (2005)

- ***Global Positioning System (GPS) Survey and Mapping, Montana***. As GIS Analyst, conducted GPS survey and mapping of rare plants identified for the USFS in Big Hole, Montana. (2005)

- ***Simulating Patterns and Processes at Landscape Scales (SIMPPLLE) Modeling, Montana***. As GIS Analyst, assisted in development of pre-processing procedures to migrate USFS Region 1 VMAP data into SIMPPLLE platform; produced users' guide and data models for procedures, Montana. (2005)

*Database Management*

- ***Database Management, USFS Region 1, Missoula, Montana***. As Database Manager, facilitated database management of Fish Xings culvert database using Microsoft Access for use in USFS District Offices. (2004)

- ***Database Management, Snow Leopard Information and Management Systems, Central Asia***. As Database Manager, facilitated database management of snow leopard sightings using ArcGIS 9.0 for use with interactive mapping service. (2005)

*Computer Aided Drafting and Design*

- ***Computer Aided Drafting and Design (CADD) Services, Bitterroot Valley Sanitary Landfill, Victor, Montana***. As CADD Analyst, produced drawings, diagrams, graphs and charts for submission to the National Institutes of Health. (2005)

- ***Base Maps, USFS Region 1, Missoula, Montana***. Cartographic Technician responsible for editing secondary base maps for production of travel plan maps for Region 1 national forests using MicroStation and MGE. Applied federal mapping standards to layouts. Assisted with migration of MicroStation secondary base maps to ArcGIS platform. Used Adobe Photoshop and Illustrator to manipulate photographs to enhance map layout. (2003)

- ***Utility Maps, NorthWestern Energy, Missoula, Montana***. As AM/FM/GIS Technician, digitized utility maps using Intergraph's MicroStation. Edited and updated power lines and gas utility maps. (2002)

*Biological Services*

- ***Raptor Surveys, Ninepipes Wildlife Research Center, Charlo, Montana***. As Volunteer Field Staff, assisted with ongoing research of long-eared owls for two seasons. Trapped and banded long-eared owls for future tracking. Assisted with ongoing research of short-eared owls. Dissected pellets for diet analysis. (1992 to 1995)

- ***Nest Surveys, University of Montana DBS, Missoula, Montana***. As Volunteer Field Staff, assisted with nest surveys for yellow-headed blackbirds. Measured and banded fledglings for future tracking. (1992 to 1995)

- ***Song Analysis, University of Montana, Missoula, Montana***. As Volunteer Staff, assisted with song analysis for lazuli buntings. Compared recorded songs of lazuli buntings to neighboring lazuli buntings to determine method of song development in juvenile birds. Conducted song analysis for pileated woodpeckers to determine behavior. (1992 to 1995)

- ***Hair Sample Analysis, Big Sky Beetle Works, Florence, Montana***. As Volunteer Staff, assisted with analysis of hair samples collected from wolf scat to determine diet. (1992 to 1995)

## PROFESSSIONAL AFFILIATONS

Gamma Theta Upsilon, Member
Association of American Geographers, Member
Montana Association of Geographical Information Professionals, Member
North American Cartographic Information Society, Member
Society for Conservation GIS, Member

## CONTINUING EDUCATION

Russian Language Emersion, Moscow, 2002
ESRI GIS Coursework: Fire Incident Mapping Tools; Learning ArcIMS; Customizing ArcIMS; Learning ArcGIS 8; Creating, Editing and Managing Geodatabases 8.2, Introduction to Visual Basic 6

# APPENDIX C
## Rocky Mountain Native Plant Company, Inc., and Geum Environmental Consulting Inc. Resumes

# *ROCKY MOUNTAIN NATIVE PLANTS CO. PROFESSIONAL PROFILE*

## Skyler DeBoer – President/Owner

### Summary

Sky has 13 years of professional experience with wetland ecology and restoration with native plants, as well as a strong background in business management. His areas of expertise include:

- Wetland Mitigation Banking
- Wetland and Riparian Project Design, Layout, and Implementation
- Marketing and Sales

### Education & Affiliations

- Undergraduate Studies, Fisheries, University of Montana, Missoula, MT
- Undergraduate Studies, International Business, Wichita State University, Wichita, KS
- Society of Wetland Scientists
- Society of Ecological Restoration
- Colorado Riparian Association
- Ducks Unlimited

### Professional History

- President/Owner, Rocky Mountain Native Plants Co., Rifle, CO (1998 – present)
- President/Owner, Rocky Mountain Wetlands Co., Snowmass, CO (1993 – present)
- Hydrologic Tech, Earth Resource Investigations, Inc., Carbondale, CO (1993 – 1997)
- Vice President, Maroon Creek Development Corporation, Aspen, CO (1988 – 1993)
- Marketing and Sales Rep., Grand Champions Club, Aspen, CO (1985 – 1988)
- Co-Owner, Residence Inn Hotels, Nationwide (1980 – 1985)

### Representative Experience

- Wetland Restoration and Streambank Stabilization
- Reclamation Project Design, Layout, and Implementation
- Assistance with Natural Channel Design and Construction
- Streamflow Monitoring and Water Quality Sampling
- Membership Development, Marketing, and Sales
- Sales and Marketing Program Development

**Randy Mandel – Vice President/Senior Scientist**

## Summary

Randy has 24 years of experience in ecological research and application. His areas of expertise include:

- Native Plant Propagation
- Wetland, Upland, Alpine, and Subalpine Plant Ecology
- Plant Genetics and Physiology
- Wetland and Riparian Project Design, Layout, and Implementation

## Education & Affiliations

- Graduate Studies, Plant Physiology and Genetics, Colorado State University
- Bachelor of Science, Forest Biology, Conc. Physiology and Genetics, CSU
- Colorado Riparian Association, President 1999 – 2000
- Society for Ecological Restoration, Central Rockies Chapter, President 2002
- Society for Range Management
- International Plant Genetic Resources Institute

## Representative Professional History

- Vice Pres./Senior Scientist, Rocky Mtn. Native Plants Co., Rifle, CO (1998 - present)
- Vice President, Rocky Mountain Wetlands Co., Snowmass, CO (1998 – present)
- Regional Plant Ecologist, USDA-NRCS, Northern Plains Region (1995 – 1998)
- Plant Materials Specialist, Colorado, USDA-NRCS (1993 – 1995)
- Director, Upper Colorado Environmental Plant Center, USDA-NRCS (1992 – 1995)
- Assistant Manager, Rose Lake PMC, E. Lansing, MI, USDA –NRCS (1991 – 1992)
- Assistant Manager, Cape May PMC, Cape May, NJ, USDA-NRCS (1989 – 1991)

## Representative Experience

- Propagated site-specific plant species for 5 National Parks and dozens of Park Service Projects for the USDI-NPS as well as multiple Justice Department Consent and Decree Projects.
- Direct Association with the development of 20+ certified plant cultivars
- Lead Scientist for 500+ USDA-NRCS plant breeding/selection projects
- Propagation of 2500+ native plant species from xeric, mesic, and hydric ecosystems
- 22 years of experience restoring/reclaiming ecological sites from sea level to 14,000+ ft. in elevation

## Representative Publications


- Mandel, R.; Alberts, D.; 2005. Propagation protocol for Oneseed and Utah junipers (Juniperus monosperma and J. osteosperma). Native Plant Journal, v.6, No.3, Indiana University Press. pp. 263 – 266.
- Mandel, R. The challenges of bringing native plant materials into the marketplace. Proceedings, 16th Annual High Altitude Revegetation Conference, March 3 – 5, 2004.
- Alberts, D.; Mandel, R.; 2004. Propagation protocol for Callirhoe involucrata. Native Plant Journal, v.5, No.1. Indiana University Press. pp. 25 – 26.

**Michael Thomas – Contract Specialist/ Senior Marketing Associate**

## Summary

Michael has 20 years of experience in forestry and restoration planting as well as extensive knowledge of native plant production and community distribution. He also gained considerable experience in permitting and remote site project management while working as a minerals exploration geologist. His areas of expertise include:

- Native Plant Installation Project Support and Management
- Large Contract Administration and Compliance
- Riparian and Upland Plant Ecology

## Education & Affiliations

- Master of Science, Geology , University of Montana, Missoula, MT
- Bachelor of Science, Geology, Central WA University, Ellensburg, WA
- Bachelor of Science, Psychology, Cornell University, Ithaca NY
- WA State Licensed Geologist
- Member; Society of Mining, Metallurgy, and Exploration ; 2000-present.
- Member, American Society of Mining and Reclamation; 1999- present.

## Representative Professional History

- Senior Sales and Marketing Associate; Rocky Mountain Native Plants; Corvallis MT (present)
- Senior Project Estimator/ Contract Specialist; Bitterroot Restoration Inc.; Corvallis, MT (2002-2006).
- Assistant Marketing Manager/ Mined Land Reclamation Specialist; Bitterroot Restoration; Corvallis, MT (1996-2001).
- Assistant Restoration Services Supervisor/ Shadehouse Assistant/ Plant Maintenance Technician; Bitterroot Restoration; Corvallis, MT (1994-1996)
- Exploration Geologist/ Project Manager ; Various firms at project locations in NV,WA, ID, and MT; (1986-1993)
- Reforestation Contractor; contracts with various public and private entities in WA, ID, OR, and MT; (1975-1985)

## Representative Experience

- Managed restoration planting contracts with public and private entities throughout the western US.
- Supported restoration planting crews at remote sites throughout the western US.
- Participated in all aspects of sales and plant production of large native plant nursery.
- Client liason for large plant production and installation projects including technical advice regarding species selection, timing constraints, shipping and on-site maintenance logistics, and review of project specifications and design layout.
- Managed remote site mineral exploration projects in various locations in the western US - duties included project planning; coordination with permitting agencies, landowners, and subcontractors; construction and reclamation of primitive access roads and work sites; supervision of sampling protocols and sample processing and testing; and data compilation and interpretation.

**Bill LaBarre – Assistant Project Installation Manager**

## Summary

Bill has 11 years of experience in land rehabilitation and sustainable vegetation establishment. His areas of expertise include:

- Disturbed Area Reclamation
- Vegetation Management for Multiple Uses

## Education

- Bachelor of Science, Botany, Colorado State University
- Bachelor of Science, Natural Resources Management, Colorado State University
- A.A.S. Environmental Technology, Land Management, Colorado Mountain College

## Professional History

- Asst. Project Installation Manager, Rocky Mountain Native Plants (2000 – present)
- Vegetation Management Tech; W& P Natural Resources Consulting, Inc., CO (2001)
- Community Forestor, U.S. Peace Corps, Nepal (1998 – 2000)
- Biological Service Tech.–Veg., USDI – National Park Service, UT (1997 - 1998)
- Forestry Technician, USDA – Forest Service, CO (1993 – 1996)

## Representative Experience

- High altitude restoration and revegetation
- Exotic plant management and control
- Work in plant taxonomy and systematics

Non-Timber Forest Products management and education

## THOMAS G. PARKER

*Principal Ecologist*

### EDUCATION

*Master of Science, Resource Conservation (1996) University of Montana*
*Bachelor of Science, Forestry (1988) University of Montana*

### LICENSES AND CERTIFICATIONS

*40 Hour OSHA 1910.120 Hazardous Waste Operations and Emergency Response*

### PROFESSIONAL DEVELOPMENT

*Fluvial Geomorphology, taught by Dave Rosgen at Pagosa Springs, Colorado. August, 1996.*
*Proper Functioning Condition Assessment of Riparian Areas, U.S. Forest Service, July, 1998.*

### PROJECT EXPEREINCE

***Milltown Dam Restoration Planning, State of Montana, current.*** Mr. Parker is leading development of the riparian revegetation portion of the Final Restoration Plan for Milltown Dam removal, as part of an interdisciplinary restoration planning team in preparation for removing Milltown Dam and restoring the Clark Fork River /Blackfoot River confluence. The revegetation plan emphasizes revegetation techniques that mimic natural floodplain processes. The revegetation plan is organized according to different spatial geomorphic components within the floodplain: for example, frequently flooded depositional areas rely more on natural cottonwood regeneration processes, while off-channel wetland strategies emphasize aggressive, active revegetation to promote desirable native species and limit weed infestation.

***Riparian Restoration Planning, Jocko River, Montana, Confederated Salish and Kootenai Tribes. Current.*** Mr. Parker is assisting the Confederated Salish and Kootenai Tribes in their efforts to restore the Jocko River in western Montana. Tasks include: developing revegetation plans, writing wetland and vegetation-related chapters of a Master Plan document, delineation and assessment of wetlands and plant communities for the watershed complex; riverine functional assessments; participating in general watershed restoration planning activities; and construction oversight for active restoration projects. In addition, during summer 2004, Mr. Parker filled many of the roles normally filled by the Tribal Restoration Botanist while that position was vacant.

***Rye Creek Road Revegetation and Sediment Control, Ravalli County Road and Bridge Department, 2006 to present.*** Mr. Parker worked with the County Road and Bridge Department to design road slope revegetation and erosion control as part of a multi-partner sediment reduction project along Rye Creek Road. Partners included Ravalli County, Trout Unlimited, Bitter Root Water Forum, and U.S. Forest Service.

***Revegetation Planning for Blackfoot Watershed Projects, Big Blackfoot Chapter Trout Unlimited, 2006.*** Mr. Parker developed revegetation plans to support three stream restoration projects being implemented by partners associated with the Blackfoot Watershed near Ovando, Montana. Revegetation strategies take advantage of natural recovery where possible, and focus limited revegetation budgets on the most heavily disturbed areas.

***Warm Springs Creek Stream Restoration Plan, Mackay, Idaho, 2004-2005.*** Working with Westwater Consultants, Inc., Mr. Parker developed riparian revegetation plans for a habitat improvement project along a spring creek in the Big Lost River watershed north of Mackay Idaho. Constraints to revegetation include historical grazing, deep organic soils, and continued elk and deer browse. Mr. Parker oversaw implementation of revegetation and streambank bioengineering techniques.

***Thompson River Riparian Restoration. 1998 to present.*** Mr. Parker designed and implemented a riparian restoration project associated with bull trout habitat restoration for Plum Creek Timber Company in support of their Native Fish Habitat Conservation Plan commitments. The project is located

adjacent to the Thompson River Road between mile markers 30 and 35. This project, supported in part by Montana's Future Fisheries Program, is aimed at restoring native riparian forest and shrub communities to a floodplain currently dominated by reed canarygrass, an invasive grass that out-competes native plant species and results in poor fish and wildlife habitat. The project design combines cardboard and wood chips to suppress canarygrass, modify the soil nutrient budget, and promote native shrub establishment. Mr. Parker has worked on this reach of the Thompson River since 1998 and is thoroughly familiar with riparian and wetland plant communities in the area.

***Final design for Finley Creek Flats Wetland Mitigation Site, Flathead Indian Reservation, Montana, Confederated Salish and Kootenai Tribes, 2002 to present.*** Mr. Parker worked with tribal staff to develop a final wetland restoration plan for a 300-acre parcel, based on a restoration concept he had previously developed. The restoration plan is focused on enhancing wetland function by re-grading drainage ditches, naturalizing a constructed pond, and converting agricultural land to scrub-shrub wetlands. Mr. Parker completed wetland delineations and functional assessments at the site. In addition, he contributed to wetland permitting and development of a Wetland Reserve agreement between the Tribes and Montana Department of Transportation.

***Darby-Lost Trail Wetland Restoration Plan, Camp Creek near Sula, Montana, Western Federal Lands Highway Division, Federal Highways Administration, 2004.*** Mr. Parker was the project manager for a wetland restoration plan and biological resources report developed to support removal of fill material in the Camp Creek floodplain south of Sula, Montana. Mr. Parker facilitated an agreement among involved parties that resulted in a restoration approach for the site, and formed the basis for plans and environmental documentation developed by Geum Environmental Consulting, Inc. Within the project area, wetlands and riparian areas were delineated and classified according to the 1987 Corps of Engineers manual and *Classification and Management of Montana's Riparian and Wetland Sites* by Hansen and others (1995).

***US 93 Wetland Mitigation Planning, Montana Department of Transportation, 2002-2003***. Mr. Parker led development of a wetland mitigation program for highway construction between Evaro and Polson on the Flathead Indian Reservation. Tasks included mitigation site selection; development of wetland mitigation concepts; coordinating a Wetland Mitigation Group that included tribal, state, and federal representatives; and working with several engineering firms to guide development of final designs

***Rosebud Creek Restoration. 2000-2001.*** Mr. Parker served as project manager for an emergency wetlands mitigation and streambank restoration project, in response to an Environmental Protection Agency enforcement action, along Rosebud Creek in eastern Montana. Recent road construction disturbed a portion of the perennial stream, requiring emergency assessment, planning and wetlands mitigation work. He worked closely with the COE, Montana Department of Transportation, and the Environmental Protection Agency in the permitting, planning and implementation phases of the project.

***Wetland Delineation and Ecological History, Payette National Forest, Idaho. 2001.*** Mr. Parker conducted a wetland delineation of a 100-acre site encompassing Blowout Creek near Stibnite, Idaho in preparation for a stream restoration project. In addition, he developed an ecological history of the site to aid in identifying a desired future condition for the site.

***Painted Rocks Highway Revegetation Plan, Bitterroot National Forest, Montana. 2001.*** Mr. Parker developed a revegetation plan for the second phase of a highway construction project along Painted Rocks Lake in southwestern Montana for the Bitterroot National Forest, West Fork Ranger District. The plan was driven by the need to meet NPDES permit requirements for nonpoint source sediment control. Prescriptions, broken out according to slope steepness and soil quality, included erosion blankets, native containerized seedlings, native grass seed, soil amendments, bonded fiber matrix, maintenance watering and mycorrhizal inoculation of the site.

***Bitterroot National Forest, McClain Creek Landslide Revegetation Plan, Montana. 2000-2001.*** Working with U.S. Forest Service personnel, Mr. Parker developed a revegetation plan aimed at integrating ecological restoration approaches with an existing geotechnical engineering plan for a landslide in the Bitterroot Mountains of western Montana. He classified the landslide into functional zones based on surface erosion processes and developed prescriptions that included native alders, willows, conifer, forb and graminoid species. Erosion control techniques included permanent non-degradable erosion fabric, slash windrows, contour wattles and porous gully check dams.

***Yosemite National Park, Merced River, Cascades Dam Removal Revegetation Plan. 1999.*** The National Park Service proposed to remove a dam on the Merced River near Yosemite National Park. Tom (as a Bitterroot Restoration employee) developed the revegetation plan for the post-dam removal streambank zones. Using a laser level, he surveyed the elevational range of flood plain plant species relative to streambank features and developed an appropriate planting mix based on the results. In addition, he developed a monitoring plan for the site based on standard Army Corps of Engineers mitigation wetland requirements.

## PUBLICATIONS


Parker, Thomas G. 2001. Riparian area revegetation for the Bitterroot River and Clark Fork River in western Montana. Miscellaneous publication prepared for Montana Fish, Wildlife and Parks.

Parker, Thomas G. and Darrel D. Myran. 2001. A bioengineering approach to upgrading sediment ponds. Geotechnical Fabrics Review 19(1): 36-43.

Parker, Thomas G. 1996. Wetland vascular plant community diversity in Montana. Master's Thesis. University of Montana.

Parker, Thomas G, Paul L. Hansen, R.C. Ehrhart, and Bill Thompson. 1996. Riparian and wetland ecological health evaluation of selected streams on the Charles M. Russell National Wildlife Refuge. Riparian and Wetland Research Program, University of Montana, Missoula, MT.

Parker, Thomas G. and Paul L. Hansen. 1996. Riparian and wetland ecological health evaluation of East Slippery Ann Habitat Unit (#2) and Germaine Coulee Habitat Unit (#55): Charles M. Russell National Wildlife Refuge. Contract Completion Report for USDI Fish and Wildlife Service Cooperative Agreement Number 14-48-0006-95-939, Modification No. 2. Riparian and Wetland Research Program, University of Montana, Missoula, MT.

Clayton, Steven R., Thomas G. Parker (and others). 1998. Upper Clark Fork River Streambank Stabilization Pilot Study. Riparian and Wetland Research Program, University of Montana.

## AMY M. SACRY

*Biologist*

### EDUCATION

*Masters of Science, Resource Conservation (2004) University of Montana, Missoula, Montana*
*Bachelor of Science, Biology (1998) Graceland University, Lamoni, Iowa*

### LICENSES AND CERTIFICATIONS

*40 Hour OSHA 1910.120 Hazardous Waste Operations and Emergency Response*

### PROFESSIONAL DEVELOPMENT

*Soil Bioengineering I, II, and III, Portland State University, 2003*
*Master Invasive Plant Management, Missoula County Extension Office, 2003*
*Proper Functioning Condition Wetland Assessment, Natural Resources Conservation Service, 2002*
*Wetland Delineation with Emphasis on Soils and Hydrology (based on the Army Corps of Engineers Wetland Delineation Manual), Wetland Training Institute, 2002*

### PROFESSIONAL MEMBERSHIPS

*American Fisheries Society*
*Society for Ecological Restoration*

### PROJECT EXPERIENCE

***Gird Creek Restoration Project, 2007-present, Corvallis, MT, Teller Wildlife Refuge.*** This project includes developing restoration strategies for a 8,000-foot reach of Gird Creek located on the Teller Wildlife Refuge in Corvallis, Montana. Ms. Sacry is the project manager and is coordinating and assisting with data collection, preparing restoration alternatives and will prepare the restoration plan for the site. Project objectives include; enhancement of adult migratory fish habitat, creation of spawning and rearing habitat, restoration of natural channel function and processes, and maintaining or creating public access, outreach and education opportunities.

***Therriault Creek Riparian Restoration Project, 2006-present, Eureka, MT, Kootenai River Network.*** This project includes developing a riparian revegetation plan for a 9,000-foot restored reach of Therriault Creek, near Eureka, Montana. Ms. Sacry is the project manager and prepared the riparian revegetation plan for the site. She is coordinating a riparian revegetation workshop to demonstrate the planning process and riparian revegetation techniques. She is also coordinating implementation of the revegetation plan, scheduled to begin in Fall 2007.

***Mission Creek Riparian Restoration Project, 2006-present, Moiese, MT, Confederated Salish and Kootenai Tribes.*** Ms. Sacry is a member of a team of restoration specialists assisting the Confederated Salish and Kootenai Tribes with restoration efforts along Mission Creek, tributary to the Jocko River near Moiese, Montana. She provided construction oversight for the bioengineering and revegetation portions of Phase I of the project. Project components included construction of bioengineered soil lifts and coir log fascines and construction of floodplain swales. Ms. Sacry designed and provided construction oversight for revegetation efforts along Phase II project, scheduled for construction in 2008. The purpose of this

portion of the project is to establish riparian vegetation in high priority areas along portions of the proposed channel alignment. Project components include grading of future streambanks and floodplain terraces, installation of containerized plants and creation of an on-site nursery in preparation for future planting needs along the Phase II channel alignment.

***Milltown Dam Phase II Revegetation Plan, State of Montana. 2004 to present.*** Geum Environmental is developing the final revegetation plan for Milltown Dam as part of an interdisciplinary restoration planning team in preparation for removing Milltown Dam and restoring the confluence of the Clark Fork and Blackfoot Rivers. The revegetation plan emphasizes revegetation techniques that mimic natural floodplain processes and is organized according to different spatial geomorphic components within the floodplain. Ms. Sacry is assisting with all aspects of revegetation planning.

***Fishtrap Creek Fish Habitat Enhancement Project, 2006, Thompson Falls, MT, Plum Creek Timber Company.*** Ms. Sacry designed, prepared a permit support document and provided construction oversight for a pilot large woody debris placement project on Fishtrap Creek near Thompson Falls, Montana. The purpose of the pilot project is to restore large woody debris to an approximately 500-foot reach of Fishtrap Creek. The project will benefit all fish species inhabiting Fishtrap Creek, which include westslope cutthroat, bull, rainbow, and brook trout, along with mountain whitefish, and sculpins. The project is the result of a collaborative effort between Plum Creek Timber Company, Lolo National Forest, Montana Department of Fish, Wildlife and Parks, and the U.S. Fish and Wildlife Service.

***Finley Creek Fish Habitat Enhancement Project, 2007, Arlee, MT, Confederated Salish and Kooteani Tribes.*** Ms. Sacry designed and provided construction oversight for a large woody debris restoration project on Finley Creek near Arlee, Montana. The purpose of the project was to use diverse configurations of logs to encourage overbank flow to restore hydrology to an adjacent scrub-shrub wetland. Other project objectives include enhancing fish habitat and restoring natural channel processes, such as sediment deposition and scour to stimulate natural riparian revegetation processes.

***Wheelbarrow Creek Restoration Project, Stevensville, MT, Tri-State Water Quality Council, 2005-Present.*** Ms. Sacry is the project manager and prepared a conceptual restoration plan for a one-mile long reach of Wheelbarrow Creek, located northeast of Stevensville, Montana. Restoration strategies in the plan target sediment reduction and improvement of habitat quality within the stream. Restoration techniques include; channel re-alignment, construction of bioengineered soil lifts and coir log fascines, riparian planting, in-stream habitat structures, and elevation of a 400-foot reach of channel to restore floodplain connectivity. Ms. Sacry assisted with acquiring project funding and permitting for the project. She provided construction oversight for the initial phase of the project and will provide oversight for the final phase in 2007. In addition, Ms. Sacry coordinated volunteer days with local volunteer groups and donated time to conduct classroom and field educational tours for local students.

***Ashby Creek Riparian Restoration Project, 2006, Ovando, MT, Big Blackfoot Chapter of Trout Unlimited.*** Ms. Sacry provided construction oversight for the bioengineering and riparian revegetation portions of a 16,000-foot channel restoration project on Ashby Creek near Ovando, Montana. Ms. Sacry coordinated a large volunteer effort utilizing high school students and local volunteer groups to implement a portion of the revegetation plan.

***Skalkaho Creek Streambank Stabilization, Private Landowner, 2005-2006.*** Ms. Sacry was the project manager for a streambank stabilization project along Skalkaho Creek located near Hamilton, Montana. She assisted with data collection, design and prepared a permit support document and permit application for the project. Project design included stabilizing a 75-foot long eroding streambank using root wads and a bioengineered vegetated soil lift. Ms. Sacry coordinating all aspects of project construction and oversaw construction of the design in late March, 2006.

***Threemile Creek Restoration, Tri-State Water Quality Council and Brown Valley Ranch, 2004-2005.*** Ms. Sacry was the project manager and prepared a restoration plan for two reaches of Threemile Creek, a tributary to the Bitterroot River in western Montana. Designs emphasized sediment reduction through streambank bioengineering, minor stream realignment and in-stream habitat improvement. Ms. Sacry oversaw design implementation during Fall 2005 including bioengineering, stream channel re-alignment and placement of large woody debris in the channel using a team Belgian draft horses.

***Grave Creek Revegetation, River Design Group, 2005-2006.*** River Design Group, Inc. of Whitefish, Montana, contracted with Geum Environmental to develop revegetation strategies for a completed channel restoration project along Grave Creek located near Eureka, MT. Revegetation techniques included; bioengineered soil lifts, floodplain terrace placement, excavation of swales in constructed floodplains, solarization weed control treatments and planting of containerized shrubs. Ms. Sacry prepared design plans and oversaw project installation during Fall 2005 and Fall 2006.

***Pattee Creek Restoration, Montana Trout, 2005.*** Ms. Sacry was the project manager and prepared design documents to support a restoration design prepared by WestWater Consultants, Inc. for two reaches of Pattee Creek located in residential parks in Missoula, Montana. Ms. Sacry assisted with project logistics and construction oversight of channel realignment, drop structure placement, and riparian revegetation. The project utilized numerous community volunteers.

***Jocko River Restoration Demonstration Reach Phase I, Confederated Salish and Kootenai Tribes, 2004.*** Ms. Sacry provided construction oversight for the plant salvage and streambank bioengineering portions of a large river channel re-alignment and riparian restoration project on the Jocko River in western Montana. Project activities included developing planting plans and materials lists, coordinating crews and installation of bioengineering techniques.

***Restoration Recommendations for US Highway 93 Improvement Project, Evaro to Polson, Montana, 2002-2003.*** The Federal Highway Administration (FHWA), Montana Department of Transportation (MDT) and the Confederated Salish and Kootenai Tribes (CSKT) are proposing improvements to US Hwy 93 on the Flathead Indian Reservation. Ms. Sacry provided design comments and recommendations for incorporating fish habitat features into bank stabilization and channel reconstruction designs for stream crossings and wetland mitigation sites.

***Blackfoot River Fish Habitat Restoration, Bureau of Land Management, 2001-2002.*** While employed with the Bureau of Land Management, Ms. Sacry was a member of a team of biologists that designed, implemented, and monitored large woody debris enhancement projects on Belmont Creek and Chamberlain Creek, tributaries to the Blackfoot River in western Montana. These projects restored large wood in areas where it was historically removed or recruitment had been reduced due to past land management activities. The focus was on improving salmonid spawning and rearing habitat. The projects implemented a low impact technique of whole tree placement using a team of draft horses, cables and pulleys, to prevent impacts to the stream and riparian systems.

***Blackfoot River Streambank Stabilization Project, Bureau of Land Management, 2001.*** While employed with the Bureau of Land Management, Ms. Sacry was a member of a team that designed, implemented, and monitored a streambank bioengineering project on the Blackfoot River, within the Blackfoot River Recreation Corridor. The project incorporated coir logs, hedge-layering, brush-matting and riparian revegetation techniques to stabilize a newly developed recreation site.

## PUBLICATIONS

Sacry, Amy M. 2004. Stream and habitat variables influencing the distribution and abundance of *Tubifex tubifex* in Chamberlain Creek. Master's Thesis. University of Montana.